McKinsey & Company

Getting back to work

Leading the *return* to operational health

May 2020

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Introduction

Just two months later, daily reports of outbreaks—and of waxing and waning infection and mortality rates—continue to heighten anxiety, stir grief, and cast into question the contours of our collective social and economic future. Never in modern history have countries had to ask citizens around the world to stay home, curb travel, and maintain physical distance to preserve the health of families, colleagues, neighbors, and friends. And never have we seen job loss spike so fast, nor the threat of economic distress loom so large.

In this unprecedented reality, we are also witnessing the beginnings of a dramatic restructuring of the social and economic order—the emergence of a new era that we view as the "next normal." Dialogue and debate have only just begun on the shape this next normal will take. But since the onset of the pandemic, McKinsey has published a rapidly growing collection of insights (at least 250, at this two-month mark) on the impact of COVID-19 on the economy, the workforce, and the gamut of functions and industries, both globally and in specific regions across the world. We have collected and curated the first 100 of these articles into four compendiums, organized by the initial stages of the path we see as leading from the current crisis to the post-pandemic era—the next normal that will materialize after the battle against coronavirus has been won.

These initial stages are Resolve, Resilience, and Return; as we progress, they will be followed by Reimagination and Reform.

In this third of four compendiums, *Getting back to work*, we curate a selection of articles related to stage three, Return: leading the way beyond a shock that, for many businesses, has included painful and extended shutdowns. We begin with how to restart and manage manufacturing plants safely through the remainder of crisis, as well as how to address the massive supply-chain disruption due to the coronavirus. We talk about how marketing executives can adapt customer experience to the changing context—the most sensitive ways to communicate with customers in crisis, for example, and the right time to shift from crisis management to recovery mode. And we examine the digital-led recovery from COVID-19: the sudden acceleration in digital initiatives that the pandemic has catalyzed, as well as the technology necessary to enable such rapid advances.

You can download this and three other compendiums at McKinsey.com/pathbeyondcovid-19, as well as find these and our entire collection of individual insights at McKinsey.com/covid-19.

We look forward to your feedback at Crisis_Feedback@McKinsey.com.

Raju Narisetti
Global Publishing Director Elect
McKinsey Publishing

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Restarting manufacturing

Managing a manufacturing plant through the coronavirus crisis

Manufacturers can follow three guiding principles to keep their workers safe while preparing for increased uncertainty and long-lasting changes to the work environment.

by Vivek Furtado, Tom Kolaja, Curt Mueller, and Julian Salguero

As the COVID-19 pandemic sweeps across the globe, manufacturing organizations face significant operational challenges. Some companies have temporarily shuttered factories in response to government restrictions or falling demand, but others are facing significant increases in demand for essential supplies.

Frontline manufacturing staff can't take their work to the relative safety of their homes. Plant leaders are therefore looking for ways to operate through the immediate crisis—all while preparing for a potentially much longer period of heightened uncertainty regarding demand and supply, and a lasting need to maintain enhanced hygiene and physical distancing.

Three areas of focus can help plant leaders navigate the transition from initial crisis response to the "next normal":

1. *Protect the workforce:* Formalize and standardize operating procedures, processes, and tools that help keep staff safe. Build workforce confidence through effective, two-way communication that responds to employees' concerns through flexible adaptation.

2. *Manage risks to ensure business continuity:* Anticipate potential changes and model the way the plant should react well ahead of the fluctuations to enable rapid, fact-based actions.

3. *Drive productivity at a distance:* Continue to effectively manage performance at the plant while physical distancing and remote working policies remain in place.

Protect the workforce

The most critical focus for every organization is to keep employees safe in an environment where repeated outbreaks are a persistent threat. To achieve this, companies can deploy a comprehensive set of policies and guidelines, including enhanced hygiene measures, provision of additional personal protective equipment (PPE) where necessary, physical distancing, and modifications to existing governance and behaviors.

Protecting employees' mental health has also emerged as a high priority, with companies in China (and elsewhere) providing counseling services to employees returning after prolonged quarantines. These measures, developed in the initial response to the crisis, can be integrated into an organization's standard procedures as it makes the transition to next-normal operations.

Communication is key

Ramping up internal communications is vitally important, including regular sharing of information about the company's evolving knowledge of the crisis and how it is using that knowledge to protect employees and the organization. Clarity, simplicity, and framing all matter—research from earlier epidemics shows that positive messages focused on best practices were more effective than negative messages designed to address misinformation. Frequency counts as well, as audiences need to hear a message repeatedly before fully absorbing it. And that implies consistent content, reflecting a single source of truth at the corporate center.

Finally, the best communication is two-way, with managers answering questions and engaging in an open dialogue with employees at all levels. One equipment maker, for example, asks supervisors to collect queries and concerns from frontline team members every morning. The company's HR department then publishes an updated daily list of questions and answers, which are displayed on monitors around the factory. After the introduction of the new policy, absenteeism among shop-floor staff dropped significantly and productivity returned to pre-crisis levels. As an additional, unintended benefit, the approach uncovered a number of frontline concerns unrelated to the pandemic, allowing managers to take additional steps to boost productivity and improve workforce satisfaction.

Plant leaders are already telling us that their frontline personnel appreciate the increased frequency and clarity of two-way communication necessitated by the outbreak. Organizations can capitalize on these improvements by standardizing their enhanced communication approach, rather than letting things regress to pre-crisis norms as the situation stabilizes.

Enabling workplace physical distancing

To keep staff safe over the longer term, companies can retain and formalize appropriate parts of their emergency-response guidelines, so they become part of plants' standard operating procedures. Such guidelines might include enhanced health surveillance, restrictions on the use of communal tools and areas, regular sanitization of equipment along with periodic deep cleans of whole workplaces, and HR policies that ensure workers can stay at home if they feel unwell. Regulatory changes also merit extra attention, as governments introduce new rules on mandatory sick pay, or requirements for employees to limit contact with products or one another.

At the onset of the crisis, some companies began to ask employees to take a digital survey before starting on-site work, confirming that they do not have any COVID-19 symptoms, sharing their travel history since their last shift, and verifying they understand new health and safety guidelines. This approach provided valuable data that could aid contact tracing (where consistent with local practices) in the event of a positive test at the plant. It also helps to reinforce the importance of following health policies and reminds employees to avoid the risk of getting others sick.

Minimizing the potential future impact of infections will require companies to alter team structures and working methods in order to limit contact across the workforce. One way this can be done is by establishing "pods" for all on-site personnel, organized for self-contained teams with clearly defined tasks and workspaces that can be physically and socially separated from each other as much as possible.

Organizational changes to support the introduction of pods include dedicating workers to a single production line and removing "floating" workers—for example, by making pod members responsible for collecting materials and for conducting their own routine quality checks and maintenance. Shift handover meetings can be conducted remotely, using videoconferencing technology, while the start, stop, and break times of different pods can be staggered to minimize contact in communal areas of the plant. Plants may even choose to modify shift patterns, so lines in close proximity to one another are staffed and run at different times.

Exhibit 1 shows how the pod approach might work on a packaging line. Before the changes, operators working on the line were responsible for multiple machines, supported by logistics, quality, and utility

Exhibit 1

Employee and workspace 'pods' enable shop-floor physical distancing.

Illustrative workspaces

Before: 4 together—4 operators, 1 line

Forklift operator pulls product from palletizers on multiple lines

Quality inspector audits multiple lines for defects

Utility tech supports line operators on multiple lines
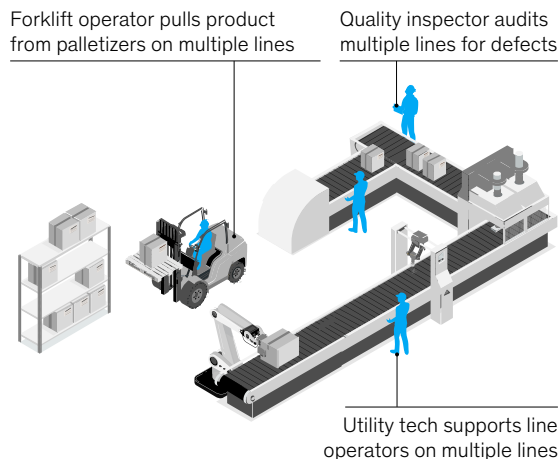
After: 2 plus 1 plus 1—2 operators in pod, plus 1 remote, plus 1 reassigned

Quality team does inspections remotely via video or augmented-reality glasses

Line operator is responsible for fewer machines, so utility tech is reassigned

Forklift operator is now line-dedicated with responsibility for palletizer

Physical barrier separates employees
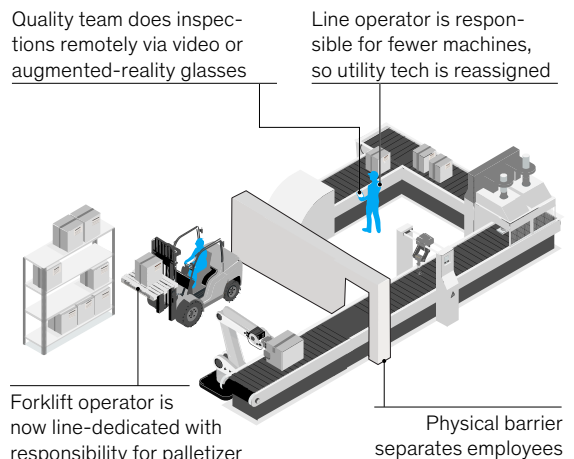
personnel who worked across multiple lines. Under the pod system, operators are assigned to fewer machines but responsible for more tasks within their work area, thereby minimizing contact with staff and equipment outside the pod.

Instead of multiple employees handling each pallet, for example, a single team member is responsible for its entire journey. Some tasks, such as quality assurance, are now conducted by remote specialists, aided by cameras and digital tools. New physical barriers guard against accidental contact between pod workers, while allowing the unimpeded movement of product.

Manage risks to ensure business continuity

The coronavirus crisis has dramatically increased risk for every business, with many experiencing shocks in both supply and demand. Manufacturing plants are at the center of that uncertainty, and their continued operation through the crisis and beyond will depend in large part on the organization's ability to navigate these wider risks. We have written elsewhere about the necessary steps to build resilience into the wider supply chain, and plant leaders will play a central role in their organization's response.

Plant leaders can also plan their own response to risks that could directly affect operations in their facility—starting with what to do if an employee anywhere in the plant tests positive for a COVID-19 infection. Responses can include—but would not be limited to—consulting with health authorities, quarantining the affected person (together with any other staff who were working in close proximity), and isolating and sanitizing exposed products, tools, and workspaces.

Facing higher levels of uncertainty over the medium term, plants will likely find it useful to ramp up their scenario planning, with a higher planning cadence and a wider range of potential scenarios included in their analysis. When closely tied to the organization's wider response and recovery strategy, this accelerated planning helps the plant develop strategies to accommodate substitute materials, or produce hard-to-source parts in-house.

Some companies are using digital twins of their facilities to simulate operation under different staffing levels and production scenarios. This approach can support many aspects of operational planning, from evaluating the impact of changes to plant layout to determining the mix of skills that on-site teams will require.

The transition to the next normal in manufacturing plants will require both leaders and frontline teams to develop new capabilities. The introduction of pods on the production line, for example, may call for operators with a wider range of skills, so they can complete all the tasks required in their pod or cover for absent colleagues.

New digital approaches can accelerate the capability-building process and allow employees to develop new skills remotely. Such techniques include the remote delivery of training using e-learning systems or the use of virtual-reality technologies to

New digital approaches can accelerate the capability-building process and allow employees to develop new skills remotely.

familiarize operators with new tasks or plant layouts. Augmented-reality systems help shop-floor staff to receive training, advice, and support from remote colleagues. Specialist contractors can use such systems to guide shop-floor staff through machine maintenance or troubleshooting.

Drive productivity at a distance

For as long as virus transmission among employees remains a risk, companies will naturally want to minimize unnecessary contact between personnel. Anybody not absolutely required on-site, including managers and many support functions, can be encouraged to work remotely as much as possible to protect the health of their shop-floor colleagues. To minimize the risk that an entire leadership cohort would need to enter quarantine at the same time, leadership staff who do need to stay on-site can be separated into at least two teams, with no physical contact between them.

As they reconfigure their operations to keep employees safe and respond to changes in the wider value chain, companies still need to maintain manufacturing performance. In many plants, leaders have long managed performance face to face, using daily shift briefings, visual management, and regular "gemba walks"—observant walk-throughs of the shop floor and wherever else the "real work" is being done. Physical-distancing and remote-working policies will make these established approaches more difficult, compelling companies to find new ways to manage shop-floor performance.

The technology necessary to support these changes doesn't need to be expensive. Staff working off-site can use secure remote-access programs from their personal devices to handle shift handover meetings and similar activities. Some plants have equipped operators with two-way radios, assigning channels to specific teams or functional groups. This approach can actually increase the speed at which issues are communicated and resolved.

Now is a good time for companies to revisit the suites of metrics they use to track manufacturing performance. To make up for reduced in-person access to the shop floor, some factory-management teams are already beginning to identify and track leading key performance indicators (KPIs) in addition to the standard first- and second-level KPIs they usually rely upon.

Exhibit 2 illustrates this approach with a simplified cascade of KPIs from a high-speed production line. Each of the top-level performance KPIs on the left of the chart sits over a number of second-level KPIs that describe the major sources of losses experienced on the line. The leading KPIs in the third column track previously agreed-on actions designed to minimize those losses.

Monitoring how often frontline teams are cleaning, checking, and adjusting critical parts of the equipment—perhaps using sensors, if available—can give team leaders and plant managers a useful early warning of potential problems before they weaken operational performance. Historically, senior

Exhibit 2

For remote management, leading key performance indicators (KPIs) provide early warning of shop-floor issues.

Standard KPIs	Second-level KPIs	Leading KPIs
Overall equipment effectiveness (OEE): Performance	Bottleneck infeed jams	Number of times infeed rails cleaned
	Bottleneck discharge jams	% of shifts when centerline was validated
	Bottleneck speed losses-jams	% of downtime of upstream equipment
OEE: Availability	Breakdown losses	% of preventative maintenance tasks completed
	Changeover losses	Number of pre-changeover checklists completed
OEE: Quality	Automatic in-line rejects	Number of reject bin audits
	Quality holds	Number of inline checks completed

managers would rely on line leaders to review these activities in person, but with only remote monitoring possible, these data points can fill critical information gaps for managers. For example, if the number of times the infeed rails are cleaned starts to fall on a filler line, managers can follow up with the operators rather than wait for jams to reduce the line's overall equipment effectiveness—the standard KPI that leadership teams usually follow.

Absenteeism rates are another important area of focus. Understandably, employees concerned about COVID-19 exposure could be reluctant to come to work, while others may be prevented from doing so by sickness or by quarantine rules. Some companies are proactively reaching out to employees the day before and the morning of their shifts to ask if they are planning to come to work, while others are offering hazard pay or soliciting volunteers to be "on call" for overtime, depending on vacancies. With advance notice of absenteeism and clear production priorities, plant teams stand a better chance of developing and executing efficient production plans.

Managers can use a skills matrix (Exhibit 3) to identify potential shortages of critical capabilities on a day-to-day tactical basis and, together with scenario modeling, guide decisions about staff training or recruitment requirements. Even a simple spreadsheet can quickly highlight problems and identify opportunities for reskilling or upskilling to improve workforce resilience.
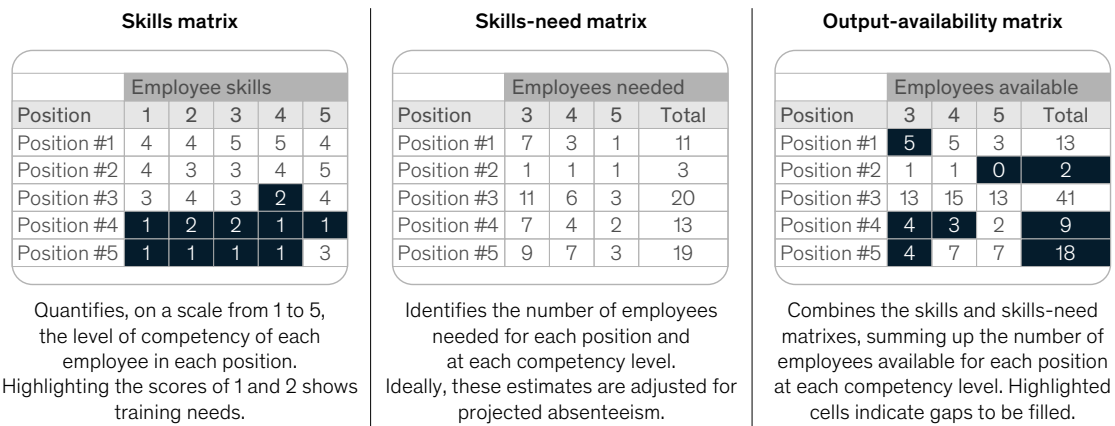
In the longer term, the organization's response to COVID-19 should accelerate the digital transformation that is already under way in many manufacturing environments. For teams working remotely or under physical-distancing guidelines, real-time data collection and advanced-analytics technologies can provide a more detailed, accurate, and up-to-date picture of plant operations.

Handheld cameras and smart glasses can give remote staff a virtual shop-floor presence, allowing them to assist frontline teams with troubleshooting tasks or even participate in gemba walks to support line supervisors and operators. Digital standard operating procedures (SOPs) and problem-solving guides can support frontline teams when managers or more experienced colleagues are not on hand. Online learning technologies can help staff develop new skills quickly, creating a more flexible, more technology-savvy workforce at every level of the organization (Exhibit 4).

The next normal is also likely to drive a change in the metrics and targets companies use to optimize manufacturing performance. Management systems that typically emphasize productivity and quality will expand to include a greater focus on flexibility (for example, the number of staff cross-trained to perform multiple tasks on the line) and resilience (the number of component shortages due to supply-chain or quality issues, or the skills that are in short supply because only a small number of employees

Exhibit 3

A skills matrix highlights potential skills gaps and upskilling opportunities.

Skills matrix

Position	Employee skills				
	1	2	3	4	5
Position #1	4	4	5	5	4
Position #2	4	3	3	4	5
Position #3	3	4	3	2	4
Position #4	1	2	2	1	1
Position #5	1	1	1	1	3

Quantifies, on a scale from 1 to 5, the level of competency of each employee in each position. Highlighting the scores of 1 and 2 shows training needs.

Skills-need matrix

Position	Employees needed			
	3	4	5	Total
Position #1	7	3	1	11
Position #2	1	1	1	3
Position #3	11	6	3	20
Position #4	7	4	2	13
Position #5	9	7	3	19

Identifies the number of employees needed for each position and at each competency level. Ideally, these estimates are adjusted for projected absenteeism.

Output-availability matrix

Position	Employees available			
	3	4	5	Total
Position #1	5	5	3	13
Position #2	1	1	0	2
Position #3	13	15	13	41
Position #4	4	3	2	9
Position #5	4	7	7	18

Combines the skills and skills-need matrixes, summing up the number of employees available for each position at each competency level. Highlighted cells indicate gaps to be filled.

have the necessary training or experience). Companies can reinforce those changes by adjusting targets and incentives for individual employees, such as by emphasizing adherence to health and safety guidelines. Staff could be rewarded for developing broader skill sets, reducing reliance on external contractors and increasing the overall resilience of the workforce.

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The coronavirus will have long-lasting—perhaps permanent—effects on manufacturing organizations, forcing companies to restructure their operations to maintain production while protecting their workers. The coming weeks and months will remain extremely challenging for plant leaders, but the crisis also creates an opportunity to reimagine the way work is done. By accelerating the adoption of new digital technologies and by drawing on the flexibility and creativity of their frontline staff, companies have the opportunity to emerge from the crisis with manufacturing operations that are safer, more productive, and more resilient.

Exhibit 4

Digital capabilities offer essential support as companies adapt their operations.
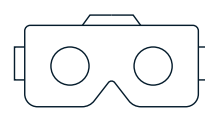
Digital capability use cases, non-exhaustive

Real-time data collection
Programmable logic controllers and related technology automatically collect data (eg, downtime pareto, speed reduction)

Digital capability building
Employees complete digital modules offsite

Augmented-reality capability building for operators
Operators receive real-time digital training and support for tasks (eg, assembly operations, machine changeovers)

Remote meetings
Technology enables face-to-face meetings from different spaces through cameras, microphones, screen sharing, and virtual whiteboards

In-line or remote quality testing
Automatic sorting system identifies and segregates defects
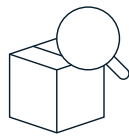
Track-and-trace functionality
System stores and reports all relevant information for each batch to enable root-cause analysis of issues
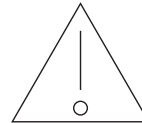
Advanced solutions to monitor supply-chain vulnerability
Advance analytics used to determine critical supplies needed for production and changes to supply based on micro and macro risks

Autonomous planning to identify demand changes
Autonomous and exception demand planning used to predict future demand accurately based on spikes or decreases from specific inputs

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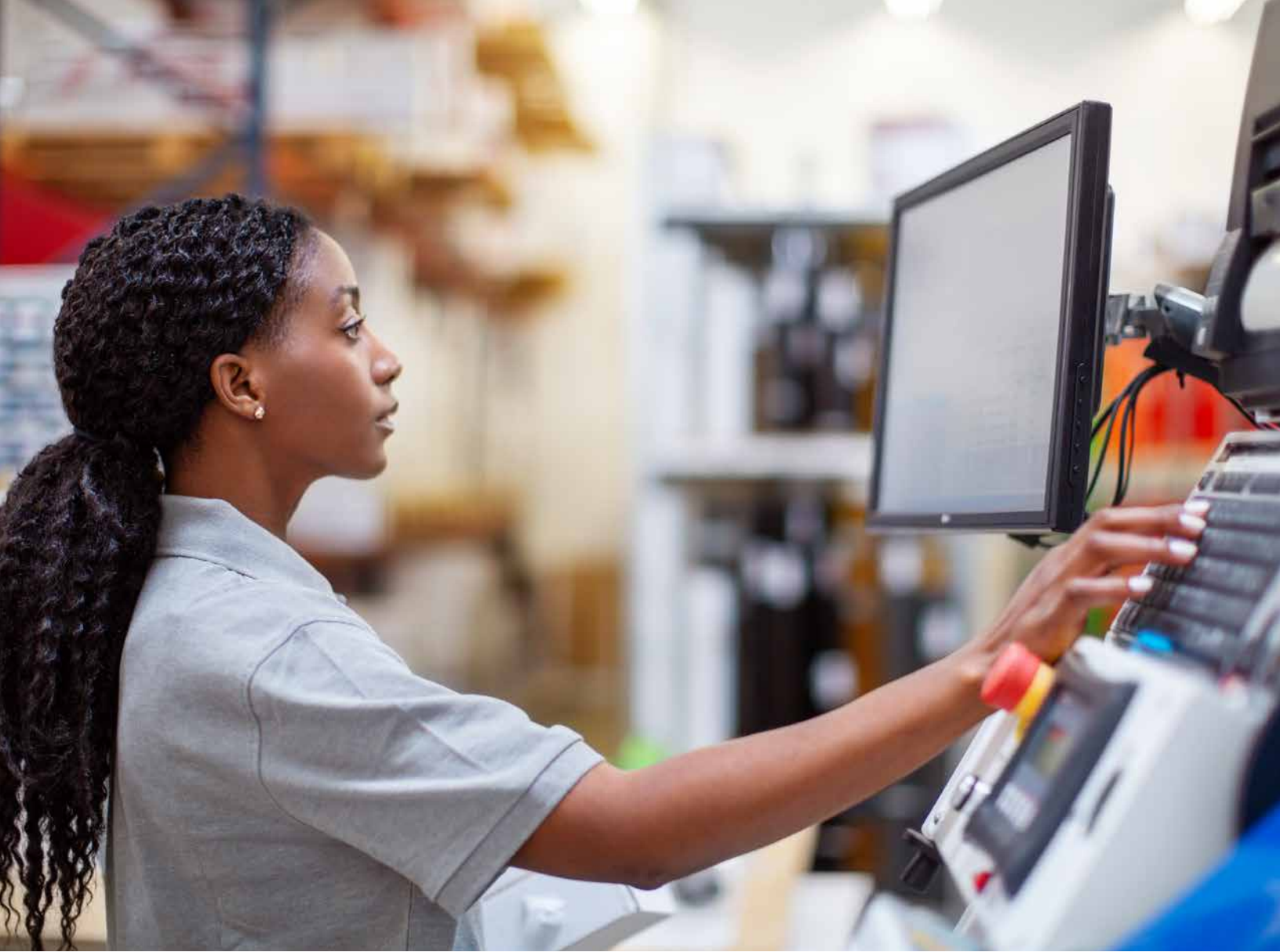
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Preparing for the next normal via digital manufacturing's scaling potential

Achieving digital at scale can give European manufacturing the resilience and flexibility it will need to speed its recovery after the coronavirus crisis—and beyond.

by Enno de Boer, Søren Fritzen, Rehana Khanam, and Frédéric Lefort

The coronavirus pandemic is changing manufacturing operations to a degree never before seen. As organizations and leaders seek to ensure the health and safety of their people, they are also reacting to supply-chain shifts that are impacting sourcing and distribution logistics. Supplier resilience is being brought into sharp focus, and labor shortages are bringing many production lines to a halt.

However, the crisis will eventually resolve, at which point production facilities will need to move quickly to respond to new sources of supply and shifting customer demands. It is these types of pressures that make digital capabilities so critical, providing flexibility and resilience manufacturers need to mobilize and operate in unfamiliar territory.

Yet most companies that have attempted enterprise-wide "digital transformation" have failed to capture the full business opportunities available from new technologies. What lessons can manufacturers learn from the few organizations that have succeeded in moving from successful small pilot projects to scaling digital innovations across their production networks?

Our latest research and experience have allowed us to uncover new insights into the challenges and success factors in implementing digital manufacturing at scale. Moreover, our work has also found that European manufacturing is lagging behind the rest of the world. Only 17 of the 44 members of the Global Lighthouse Network[1] (manufacturers that have been recognized as leading the way in their adoption of digital technologies) are in Europe, and only three of these are using fourth industrial revolution (4IR) tools across their end-to-end value chains.

Some of this seeming hesitation may be because many European manufacturers operate on brownfield sites. The task of enhancing legacy processes, systems, and machinery with 4IR tools can seem more daunting than building a digital production facility from the ground up. However, there is a risk that much of European manufacturing may fall so far behind that they will prove unable to recover the ground lost to more technologically-advanced manufacturers elsewhere.

The time for organizations to act and to implement digital is now. Our research has revealed five fundamental principles that translate into tangible actions for scaling and sustaining digital technologies, regardless of a manufacturer's starting point.

Industry 4.0 can unlock significant value

A select group of industry-leading manufacturers are using digital transformation to develop new or enhanced ways of operating their businesses, using a variety of Industry 4.0 capabilities:

— Data, computational power, and connectivity, such as sensors, the Internet of Things, cloud technology, and blockchain

— Analytics and intelligence, ranging from big data and advanced analytics to artificial intelligence and knowledge-work automation

— Human-machine interaction, including virtual and augmented reality, robotics and automation, robotic process automation (RPA), and chatbots

— Advanced production methods such as additive manufacturing and use of renewable energy

The benefits these companies have recorded include 30 to 50 percent reductions of machine downtime, 15 to 30 percent improvements in labor productivity, 10 to 30 percent increases in throughput, and 10 to 20 percent decreases in the cost of quality. These breakthroughs create impact across the value chain that may be even more important, if harder to measure: increased flexibility to meet customer demand, faster speed to market, and better integration within the supply chain.

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[1] The Global Lighthouse Network is an ongoing research project of the World Economic Forum, in collaboration with McKinsey.

Although all of the manufacturers we assessed are transitioning to digital manufacturing, they are not deploying these technologies at the same rate. In fact, most organizations find themselves stuck in "pilot purgatory," with no clear approach for quickly scaling up innovations across the manufacturing network. Our latest research confirms that at least 70% of manufacturers are languishing in pilot purgatory, according to the findings from the Global Lighthouse Network.

Culture is generally considered to be among the most significant challenges to scaling. Additionally, companies' path to success at scale is often hindered by the absence of several fundamentals, including:

— *Strategic direction* regarding where and how digital manufacturing will bring real business value, as well as the incentives for people to make it happen

— The *required capabilities*—technical, managerial, and transformational—to truly understand and execute the changes

— *Robust data and IT infrastructure*, which instead are often patchy and become a bottleneck for scaling successful pilots

A scaling approach based on five principles

How can a manufacturer successfully scale digital manufacturing across a global network and capture its full potential? Our latest research and experience show that a transformational approach should be based on five fundamental principles (Exhibit 1).

Focus on business value

To succeed, the scaling of digital manufacturing must originate from the company's digital strategy, with clear financial and operational-performance aspirations. These aspirations must in turn become formal targets linked to real business needs and cascaded throughout the organization.

For example, at a global pharmaceutical company, various business units had been experimenting with digital innovations in their operations for some

Exhibit 1

For digital transformation to achieve scale and capture their full potential, organizations should follow five principles.

1 Focus on business value

2 Transform through an integrated approach

3 Create capabilities for deployment

4 Scale deployment, capabilities, and technology

5 Manage impact capture
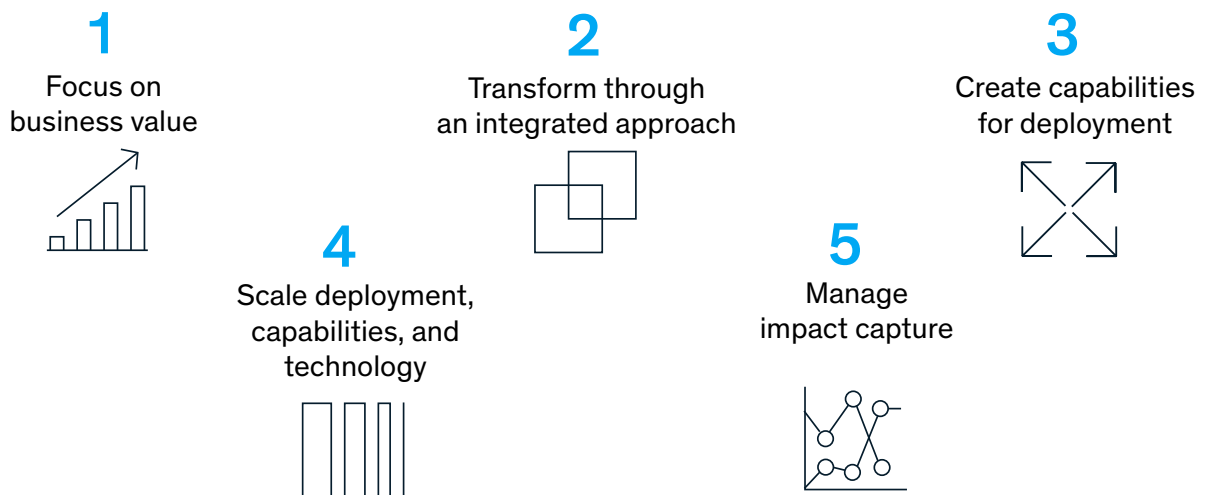
time—but few ideas achieved much impact beyond the individual unit. Company leaders recognized that they needed to clarify on a network-wide basis which digital solutions could contribute to the entire enterprise's business needs and priorities—and, accordingly, where to focus the transformation efforts and how to implement at scale.

A three-month digital scan combined qualitative interviews with a quantitative assessment of prioritized sites. The effort helped the company achieve four critical objectives:

— Confirm where and how the value at stake in digital manufacturing can support real business needs

— Define a prioritized portfolio of digital solutions to scale

— Understand the level of readiness of its data and technology infrastructure across the network

— Understand the investment required in technical, managerial, and transformational capabilities

The company applied the insights from the scan to create an aligned, and value-oriented road map for rolling out the digital transformation across the network. The plan integrated both digital and traditional improvements, accounted for resources and technology requirements, and reflected a clear strategy for building capabilities at scale.

Transform through an integrated approach
To drive transformational change, a company must follow an integrated approach at each of its sites. The approach should address a comprehensive set of capabilities and follow a structured process (Exhibit 2):

— Design digital solutions built upon a repository of value-driven use cases. Deploy the use cases as "integrated bundles" to maximize return on investment (ROI), and center them around user journeys to enhance sustainability.

Exhibit 2

Digital transformation at a site should address a comprehensive set of capabilities and follow a structured process.

Comprehensive capabilities ▶ Structured process to design and deploy the site transformation

Advanced analytics and digital solutions

Data and technical architecture

People and digital and analytics capabilities

Program and change management

1. **Preparation phase**
   with data and IT enablement

2. **Digital diagnostic phase**
   with data and IT enablement

3. **Digital design phase**
   with data and IT enablement

4. **Site digital transformation waves**
   (3-6 use cases per wave)

— Establish the data and technical architecture, in close collaboration with the IT function, to ensure scalable solutions for future roll-out. For example, horizontal scalability enables integration of more use cases into the architecture, while vertical scalability facilitates connecting more data, users, and sites.

— Invest and develop new roles and capabilities, and engage the existing line organization in a thorough reskilling and upskilling program.

— Establish a cross-functional set-up and follow an agile way of working. For example, build "minimum viable products" rapidly and iteratively while keeping things simple and learning along the way to make adjustments as needed.

Create capabilities for deployment
A well-thought-through operating model provides the basis for establishing the cross-functional setups and new capabilities that ensure effective deployment. To support both leadership and the front line through implementation, the company should build communities of practitioners including digital change agents, data scientists, data engineers, and IT architects. The company also needs "translators" to facilitate interactions between technical experts and businesspeople.

To maximize value from the transformation, the company should combine new and existing capabilities (Exhibit 3). For example, a global medtech company is using the new digital capabilities to enhance its existing lean-management and operational-excellence capabilities, rather than replace them.

This combination's power becomes clear in the application of advanced analytics to improve manufacturing-line performance. The technology cannot deploy itself: An experienced process engineer is needed, first to install sensors and then to use them in improving the process. It's the engineer who develops a root-cause hypothesis for subpar performance and identifies possible countermeasures, working with a data scientist who uses advanced analytics and modeling to prepare,

process, analyze, and interpret the data that the sensors produce. In addition, a domain expert with prior lean-management experience must serve as a translator who facilitates the interface between the line teams and the analytics and data experts. The translator glues together the new and existing capabilities, so that the team can interpret the results and make changes on the shop floor.

Most members of the team leading the transformation should be 100 percent dedicated to the effort over a fixed time period, applying a capability-building strategy that uses on- and off-the-job training with rigorous talent development. Organizations that have already codified their best capability practices into an existing manufacturing and supply chain academy can provide training for the new roles and skillsets that culminates in accreditation.

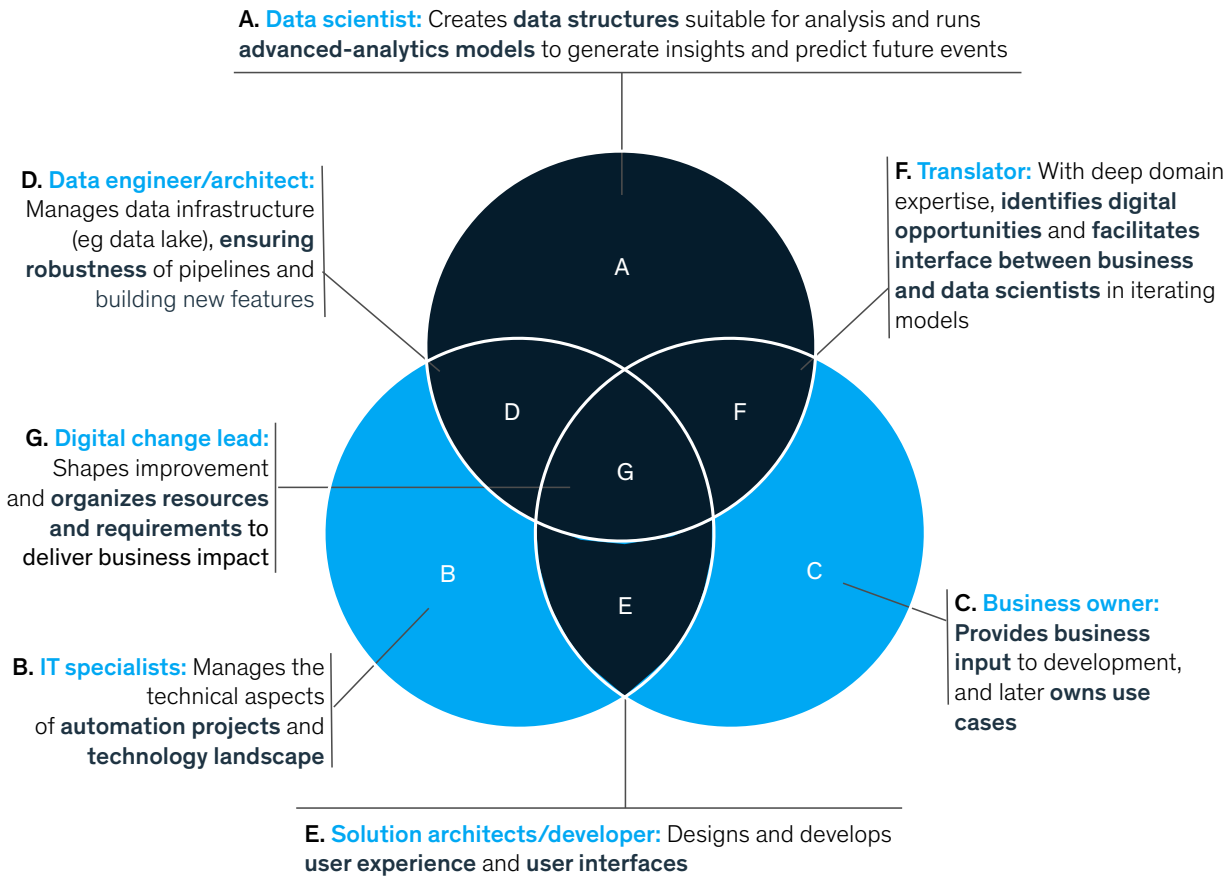## Scale deployment, capabilities, and technology

A company needs robust governance of innovation to develop value-driven use cases across its network on a continuous—preferably, industrialized—basis. The successful structures typically depend on some degree of centralization: an internal "lighthouse" site that has successfully implemented multiple 4IR technologies, for example, or an "agile studio" environment for experiencing agile working practices, or an "innovation hub" for ideation of new ideas. The insights these structures develop can then be replicated quickly across the business.

The structures also impose order, such as by categorizing use cases on the basis of maturity: in development, ready for industrialization, or scalable. It is important to have clear objectives and a set of rules on how to drive the development and scaling of the use cases, as well as promote positive collaboration across the network. Some sites will lead development, while others will industrialize use cases to be deployed at scale in the remaining sites.

The effort to deploy and scale the use cases should leverage the company's shared library of approved

Exhibit 3

To deploy the changes successfully, make structural investments into new capabilities.

■ New capabilities

A. Data scientist: Creates **data structures** suitable for analysis and runs **advanced-analytics models** to generate insights and predict future events

D. Data engineer/architect: Manages data infrastructure (eg data lake), **ensuring robustness** of pipelines and building new features

F. Translator: With deep domain expertise, **identifies digital opportunities** and **facilitates interface between business and data scientists** in iterating models

G. Digital change lead: Shapes improvement and **organizes resources and requirements** to deliver business impact

C. Business owner: Provides business input to development, and later **owns use cases**

B. IT specialists: Manages the technical aspects of **automation projects** and **technology landscape**

E. Solution architects/developer: Designs and develops **user experience** and **user interfaces**

In the future, these roles will represent **~1.5–2.5 %** of the operations organization, or 150–250 FTEs in 10,000-FTE operations organization

applications and utilize formalized playbooks. For example, a global company identified priority use cases and was preparing to roll out digital manufacturing across its network. It invested in a joint effort by practitioners at selected sites and its global center of excellence (CoE) to capture and codify a use-case repository that included detailed how-to guides and tactical training material. The contents of the repository were made available for redeployment throughout the network.

The scale-up across the network should be formalized in a roadmap with adapted deployment models that best fit the organization's context and needs, scaling mechanisms, and a resourcing strategy. The sequence and timeline of scaling should reflect the company's priorities with regard to which use cases to implement, where to implement them, and when to initiate implementation and scale up. The prioritization should take into consideration business needs, value at stake, potential ROI, and site readiness.

An organization can combine various roll-out options and tailor them based on its situation and maturity. These options include:

— A site-by-site rollout, with a dedicated team supporting each site's transformation and capability building

— Using an "academy" to transform multiple sites in parallel through structured on-the-ground capability building, with fieldwork to accomplish concrete changes between the training sessions

— A use-case propagation approach, in which specific, well-scoped initiatives are developed and rolled out across multiple sites, potentially in an accelerated fashion as no-regrets moves

— A hybrid model in which certain use cases have an accelerated roll out, while others are deployed more gradually in the context of a comprehensive site transformation

A digital CoE provides the required backbone for the digital transformation at scale and for supporting the sites. Early on, the company should clarify the CoE's overarching role at each stage of executing the road map. For example, to define the best value proposition for its CoE, a global company specified the following roles and responsibilities:

— Developing and codifying digital solutions, as well as new ways of operating in conjunction with the sites

— Providing and building digital capabilities at the site level and developing digital communities— for example, leveraging a "see, do, teach" approach that includes capability accreditation

— Delivering on-the-ground support and coaching for digital deployment to sites' leaders, change teams, and front lines to help them reach their targets; this includes, for example, using common playbooks to support change management, capability building, and sustainability

Finally, another major enabler of deployment at scale is ensuring the accessibility and scalability of data within a flexible technology architecture. Most companies will need to develop and transition to a future-state data and technology architecture—including data capture, extraction, consolidation, systems, tools, and site hardware. To develop this architecture, a company needs an integrated view of the potential use cases and the required data and technology. It must also take a longer-term perspective to sustain this new architecture by anticipating potential future technology development and disruptions. All of these elements should be linked to a syndicated future-state data and technology architecture design.

Establishing an architecture to meet future needs

To implement its use-case road map, a global company designed a data and technology architecture using a minimum viable architecture (MVA) approach—including the required technologies and tool stack down to site level. The architecture anticipates the critical features required to support the use-case road map, making it easily extendable over time. It also systematically standardizes practices for extracting data from legacy systems, with the potential to automate data-quality validations and highlight gaps between the actual and required data quality early on. Additionally, the architecture enables future scaling by re-using data engineering and analytics components through a repository of codes, data pipelines, and apps.

In many situations, external vendors will play a prominent role in deploying technology at scale. A company must take a thorough approach to engaging with vendors, including during the selection, assessment, and feasibility studies, as well as the day-to-day development and collaboration phases. To maintain transparency and proper governance for important decisions and interactions, a company needs to deploy a streamlined and consolidated approach to vendor management.

Manage for impact

Starting from day one, a company must ensure that it captures the operational and financial benefits to enable a self-funding digital transformation at scale. To manage for impact, a company needs strong governance of performance and health. This

includes assigning clear ownership, responsibility, and accountability within the business units and among the P&L owners—not within the CoE.

By rigorously managing the delivery of impact, a company can reach the hard-to-achieve targets. Sustaining the impact requires managing the health of the transformation with respect to the various requirements we have discussed—such as scoping, resources and capabilities, change story and communication, leadership commitment, and transitioning to the future-state data and technology architecture.

To work in an agile and iterative way, teams must adhere to strict governance. This includes starting sprints with the top deliverables identified, and having daily check-ins to align on priorities and actions for the day. At the end of a sprint, teams should review progress and address roadblocks, as well as consider how well the team collaborated and the opportunities for improvement. Strong governance also includes regular steering committee meetings to review achievements and critical risks.

Among the best practices we have observed is using a playbook to codify the approach to scaling and sustaining the transformation. The playbook could include a how-to guide structured in phases and specifying activities and deliverables, as well as use-case guides for each digital solution, detailed with all supporting elements.

Finally, as with any at-scale transformation, it is crucial to remember that change management is an integral part of the effort. Implementing technology solutions alone will not elevate performance!

Summing up: Best practices derived from our research and experience

Exhibit 4 summarizes the key elements of the scaling approach and highlights best practices relating to each.

— *Development, industrialization, and rollout* usually start with a lighthouse (or set of lighthouses) to enable the development and industrialization of use cases. This also allows the organization to crack data-access challenges and begin to shape the technology architecture. The learnings are captured in a library of approved apps and playbooks that support the transformation, as well as in building the blueprint for the data and technology architecture needed in scale up.

— *Enablement and governance* are supported by a digital CoE that covers elements needed for sustainability, capability building and resourcing, and change management. The CoE is typically also a supporting mechanism for continuous codification and transfer of knowledge, data and IT-architecture requirements, use cases, and code when the transformation is eventually scaled up across a network.

— *Scale-up* is based on business needs and the value at stake, with prioritization made transparent on a well-defined roadmap. In scaling up, the company selects the most appropriate deployment models, whether site by site or use case (or a combination). It supports the efforts with playbooks and a "see, do, teach" approach to build capabilities and skills. As scale-up progresses, the learnings are continually codified back into the app library and playbooks and inform data and technology architecture needs.

How should European manufacturing leaders prepare to transform at scale?

To assess a company's readiness to orchestrate a digital manufacturing transformation that integrates the five fundamental principles, leaders of manufacturing organizations should consider the following questions:

— Where would digital, robotics, and advanced analytics create the most value in your manufacturing network?

— What is your current ambition level for a digital transformation? What impact do you aspire to in the short term and medium term, respectively?

— How have you connected your digital strategy to your existing operations strategy?

Exhibit 4

The scaling approach covers rollout, governance, and value capture.

Develop, industrialize and roll-out

Use case development, industrialization and scaling

Scale

Industrialize

Develop

Site 1　　Site 2　　Sites …

○ ○ ○ ○ ○ ○ ○　　**Use-case development**
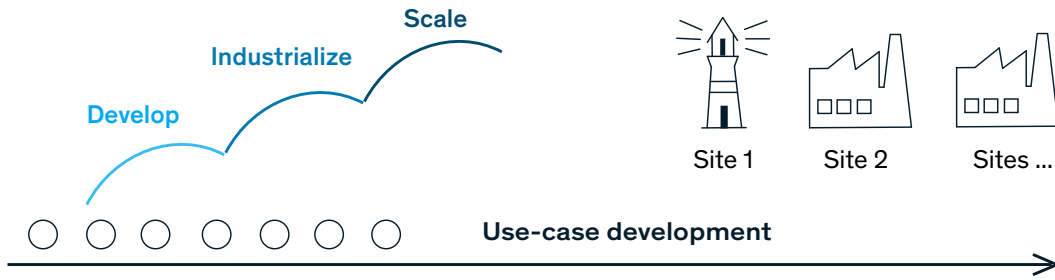
Accessibility and scalability of **data** and **flexible technology architecture**

App library and playbooks: use cases are identified, codified and made available for deployment. Components include:
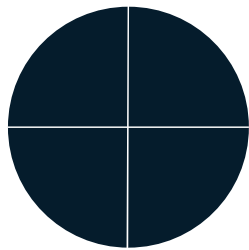
- **Repository of use cases**
- **Use-case how-to guide**
- **Training materials**

Data and technology architecture: transitioning to the future-state data and IT architecture

Enable and govern

Digital center of excellence (CoE): backbone for sites' deployment and transformation

Resourcing and capability-building strategy

Operating model and organization

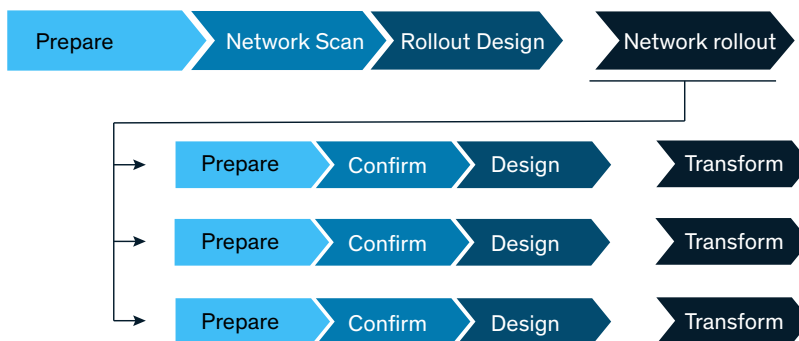Governance and metrics

Change management and communication

Continuous **codification and transfer** of knowledge, **Data/IT architecture requirements** and **use cases/code**

Scale up and capture value

Digital strategy based on **business needs** and **value at stake**

Sequence and timeline roadmap guiding scale-up prioritization

Prepare → Network Scan → Rollout Design → Network rollout

Prepare → Confirm → Design → Transform

Prepare → Confirm → Design → Transform

Prepare → Confirm → Design → Transform

— How advanced is your organization in its journey from digital development and piloting to at-scale deployment?

— Have you already established a lighthouse, agile studio, or innovation hub within your organization to support robust governance?

— What successes have you achieved? Which factors have been critical to success?

— What main challenges are you facing? What mitigation actions are you working on?

— How are you balancing the need for tangible change with the imperative for a quick return on investment?

— To what extent are you combining transformations of your business, technology, and organizational capabilities?

For many manufacturers, the answers to these questions will point to the need for a thorough reconsideration of their approach to digital transformation. Those that act quickly to orchestrate and sustain a digital transformation will be better placed to respond to the long-lasting changes in the operating environment resulting from the coronavirus pandemic. Moreover, the flexibility and resilience that digital will add to operations as manufacturing ramps up again once the current crisis is over, will allow those organizations that transform successfully to gain a significant advantage over slower-moving competitors. Now is the time to get started.

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Supply-chain recovery in coronavirus times—plan for now and the future

Actions taken now to mitigate impacts on supply chains from coronavirus can also build resilience against future shocks.

by Knut Alicke, Xavier Azcue, and Edward Barriball

Even as the immediate toll on human health from the spread of coronavirus (SARS-CoV-2), which causes the COVID-19 disease, mounts, the economic effects of the crisis—and the livelihoods at stake—are coming into sharp focus. Businesses must respond on multiple fronts at once: at the same time that they work to protect their workers' safety, they must also safeguard their operational viability, now increasingly under strain from a historic supply-chain shock.

Many businesses are able to mobilize rapidly and set up crisis-management mechanisms, ideally in the form of a nerve center. The typical focus is naturally short term. How can supply-chain leaders also prepare for the medium and long terms—and build the resilience that will see them through the other side?

What to do today

In the current landscape, we see that a complete short-term response means tackling six sets of issues that require quick action across the end-to-end supply chain (Exhibit 1). These actions should be taken in parallel with steps to support the workforce and comply with the latest policy requirements:

1. *Create transparency* on multitier supply chains, establishing a list of critical components, determining the origin of supply, and identifying alternative sources.

2. *Estimate available inventory* along the value chain—including spare parts and after-sales stock—for use as a bridge to keep production running and enable delivery to customers.

Exhibit 1

There are multiple immediate, end-to-end supply-chain actions to consider in response to COVID-19.

Supply-chain actions

**Create transparency on multitier supply chain**
- Determine critical components and determine origin of supply
- Assess interruption risk and identify likely tier-2 and onward risk
- Look to alternative sources if suppliers are in severely affected regions

Optimize production and distribution capacity
- Assess impact on operations and available resource capacity (mainly workforce)
- Ensure employee safety and clearly communicate with employees
- Conduct scenario planning and assess impact on operations, based on available capacity
- Optimize limited production, according to human-health impact, margin, and opportunity cost/penalty

Assess realistic final-customer demand
- Work with sales and operations planning to get demand signal to determine required supply
- Leverage direct-to-consumer channels of communication
- Use market insights/external databases to estimate for customer's customers

Tier-2 supplier → Tier-1 supplier → Plant → Distribution center → Customer → Customer's customer
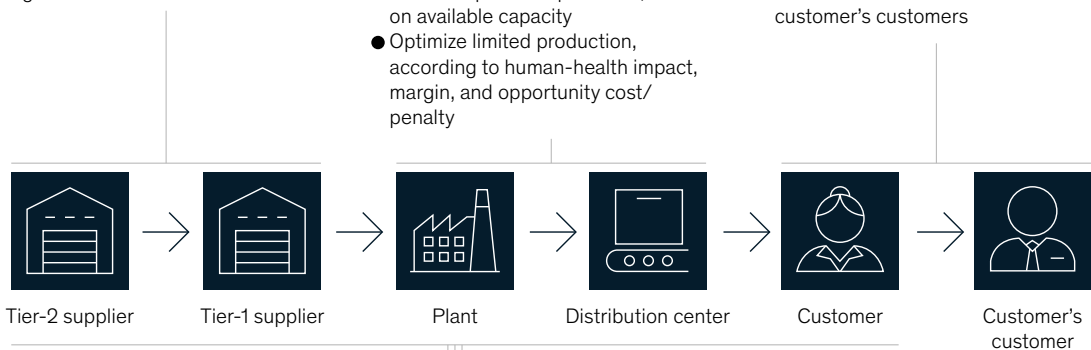
Estimate available inventory
- Estimate inventory along the value chain, including spare parts/remanufactured stock
- Use after-sales stock as bridge to keep production running

Identify and secure logistics capacity
- Estimate available logistics capacity
- Accelerate customs clearance
- Change mode of transport and prebook air/rail capacity, given current exposure
- Collaborate with all parties to leverage freight capacity jointly

Manage cash and net working capital
- Run supply-chain stress tests vs major suppliers' balance sheets to understand when supply issues will start to stress financial or liquidity issues

3. *Assess realistic final-customer demand* and respond to (or, where possible, contain) shortage-buying behavior of customers.

4. *Optimize production and distribution capacity* to ensure employee safety, such as by supplying personal protective equipment (PPE) and engaging with communication teams to share infection-risk levels and work-from-home options. These steps will enable leaders to understand current and projected capacity levels in both workforce and materials.

5. *Identify and secure logistics capacity,* estimating capacity and accelerating, where possible, and being flexible on transportation mode, when required.

6. *Manage cash and net working capital* by running stress tests to understand where supply-chain issues will start to cause a financial impact.

In the following sections, we explore each of these six sets of issues.

Create transparency
Creating a transparent view of a multitier supply chain begins with determining the critical components for your operations. Working with operations and production teams to review your bills of materials (BOMs) and catalog components will identify the ones that are sourced from high-risk areas and lack ready substitutes. A risk index for each BOM commodity, based on uniqueness and location of suppliers, will help identify those parts at highest risk.

Once the critical components have been identified, companies can then assess the risk of interruption from tier-two and onward suppliers. This stage of planning should include asking direct questions of tier-one organizations about who and where their suppliers are and creating information-sharing agreements to determine any disruption being faced in tier-two and beyond organizations. Manufacturers should engage with all of their suppliers, across all tiers, to form a series of joint agreements to monitor

lead times and inventory levels as an early-warning system for interruption and establish a recovery plan for critical suppliers by commodity.

In situations in which tier-one suppliers do not have visibility into their own supply chains or are not forthcoming with data on them, companies can form a hypothesis on this risk by triangulating from a range of information sources, including facility exposure by industry and parts category, shipment impacts, and export levels across countries and regions. Business-data providers have databases that can be purchased and used to perform this triangulation. Advanced-analytics approaches and network mapping can be used to cull useful information from these databases rapidly and highlight the most critical lower-tier suppliers.

Combining these hypotheses with the knowledge of where components are traditionally sourced will create a supplier-risk assessment, which can shape discussions with tier-one suppliers. This can be supplemented with the described outside-in analysis, using various data sources, to identify possible tier-two and onward suppliers in affected regions.

For risks that could stop or significantly slow production lines—or significantly increase cost of operations—businesses can identify alternative suppliers, where possible, in terms of qualifications outside severely affected regions. Companies will need to recognize that differences in local policy (for example, changing travel restrictions and government guidance on distancing requirements) can have a major impact on the need for (and availability of) other options. If alternative suppliers are unavailable, businesses can work closely with affected tier-one organizations to address the risk collaboratively. Understanding the specific exposure across the multitier supply chain should allow for a faster restart after the crisis.

Estimate available inventory
Most businesses would be surprised by how much inventory sits in their value chains and should estimate how much of it, including spare parts and

remanufactured stock, is available. Additionally, after-sales stock should be used as a bridge to keep production running (Exhibit 2).

This exercise should be completed during the supply-chain-transparency exercise previously described. Estimating all inventory along the value chain aids capacity planning during a ramp-up period. Specific categories to consider include the following:

— *finished goods* held in warehouses and *blocked inventory* held for sales, quality control, and testing

— *spare-parts inventory* that could be repurposed for new-product production, bearing in mind the trade-off of reducing existing customer support versus maintaining new-product sales

— *parts with lower-grade ratings or quality issues,* which should be assessed to determine whether

Exhibit 2

Built-in inventory in the supply chain will delay the full impact of halted production.

Expected stockout for companies in EU/US with suppliers in China, by industry, illustrative

Low-range estimate   High-range estimate
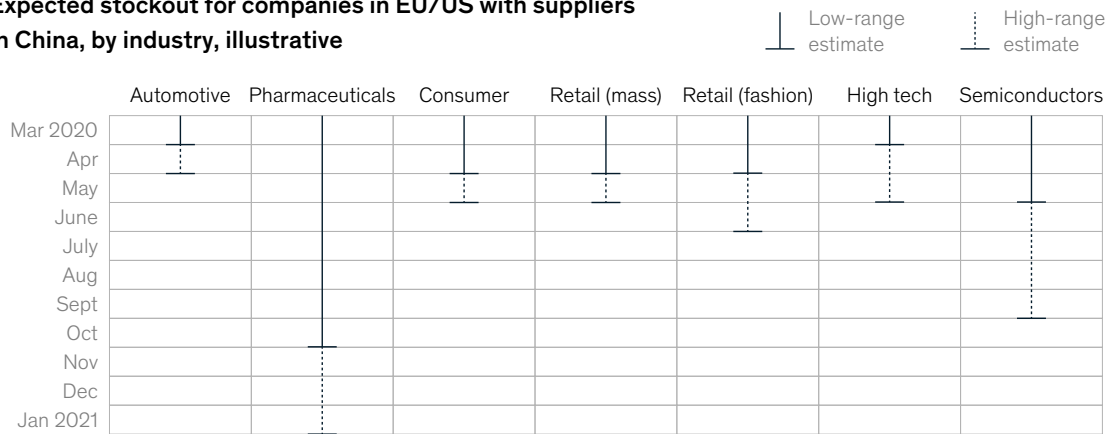
Inventory, days of stock (including supply in transit)

	Automotive	Pharmaceuticals	Consumer	Retail (mass)	Retail (fashion)	High tech	Semiconductors
2nd-tier supplier	30–40 (China)	35–70 (China)	20–30 (China)	N/A	N/A	40–60 (China)	N/A
1st-tier supplier	7–17 (EU/US)	120–140 (EU/US)	60–90 (China)	60–90 (China)	15–35 (China)	55–70 (China)	70–110 (China)
Assembly/ packaging	2–12 (EU/US)	55–100 (EU/US)	10–17 (EU/US)	10–17 (EU/US)	15–29 (EU/US)	19–45 (China)	60–90 (Philippines)
RDCs[1]	N/A	80–90 (EU/US)	14 (EU/US)	15–17 (EU/US)	15–23 (EU/US)	N/A	N/A
Market buffer	0–30 (EU/US)	N/A	N/A	7 (EU/US)	21–28 (EU/US)	24–40 (EU/US)	20–30
Total inventory days[2]	40–70	230–320	60–90	70–100	70–110	40–100	130–200

[1] Regional distribution centers.
[2] Figures for total inventory buffer and expected stockout are calculated assuming production stop at latest link based in China.

the rework effort would be justified to solve quality issues or whether remanufacture with used stock could address supply issues

— *parts in transit* should be evaluated to see what steps can be taken to accelerate their arrival—particularly those in customs or quarantine

— *supply currently with customers or dealers* should be considered to see if stock could be bought back or transparency could be created for cross-delivery

Assess realistic final-customer demand
A crisis may increase or decrease demand for particular products, making the estimation of realistic final-customer demand harder and more important. Businesses should question whether demand signals they are receiving from their immediate customers, both short and medium term, are realistic and reflect underlying uncertainties in the forecast. The demand-planning team, using its industry experience and available analytical tools, should be able to find a reliable demand signal to determine necessary supply—the result of which should be discussed and agreed upon in the integrated sales- and operations-planning (S&OP) process.

Additionally, direct-to-consumer communication channels, market insights, and internal and external databases can provide invaluable information in assessing the current state of demand among your customers' customers. When data sources are limited, open communication with direct customers can fill in at least some gaps. With these factors in mind, forecasting demand requires a strict process to navigate uncertain and ever-evolving conditions successfully. To prepare for such instances effectively, organizations should take the following actions:

— Develop a demand-forecast strategy, which includes defining the granularity and time horizon for the forecast to make risk-informed decisions in the S&OP process.

— Use advanced statistical forecasting tools to generate a realistic forecast for base demand.

— Integrate market intelligence into product-specific demand-forecasting models.

— Ensure dynamic monitoring of forecasts in order to react quickly to inaccuracies.

With many end customers engaging in shortage buying to ensure that they can claim a higher fraction of whatever is in short supply, businesses can reasonably question whether the demand signals they are receiving from their immediate customers, both short and medium term, are realistic and reflect underlying uncertainties in the forecast. Making orders smaller and more frequent and adding flexibility to contract terms can improve outcomes both for suppliers and their customers by smoothing the peaks and valleys that raise cost and waste. A triaging process that prioritizes customers by strategic importance, margin, and revenue will also help in safeguarding the continuity of commercial relationships.

Optimize production and distribution capacity
Armed with a demand forecast, the S&OP process should next optimize production and distribution capacity. Scenario analysis can be used to test different capacity and production scenarios to understand their financial and operational implications.

Optimizing production begins with ensuring employee safety. This includes sourcing and engaging with crisis-communication teams to communicate clearly with employees about infection-risk concerns and options for remote and home working.

The next step is to conduct scenario planning to project the financial and operational implications of a prolonged shutdown, assessing impact based on available capacity (including inventory already in the system). To plan on how to use available

capacity, the S&OP process should determine which products offer the highest strategic value, considering the importance to health and human safety and the earnings potential, both today and during the future recovery. The analysis will draw on a cross-functional team that includes marketing and sales, operations, and strategy staff, including individuals who can tailor updated macroeconomic forecasts to the expected impact on the business. Where possible, a digital, end-to-end S&OP platform can better match production and supply-chain planning with the expected demand in a variety of circumstances.

Identify and secure logistics capacity

In a time of crisis, understanding current and future logistics capacity by mode—and their associated trade-offs—will be even more essential than usual, as will prioritizing logistics needs in required capacity and time sensitivity of product delivery. Consequently, even as companies look to ramp up production and make up time in their value chains, they should prebook logistics capacity to minimize exposure to potential cost increases. Collaborating with partners can be an effective strategy to gain priority and increase capacity on more favorable terms.

To improve contingency planning under rapidly evolving circumstances, real-time visibility will depend not only on tracking the on-time status of freight in transit but also on monitoring broader changes, such as airport congestion and border closings. Maintaining a nimble approach to logistics management will be imperative in rapidly adapting to any situational or environmental changes.

Manage cash and net working capital

As the crisis takes its course, constrained supply chains, slow sales, and reduced margins will combine to add even more pressure on earnings and liquidity. Businesses have a habit of projecting optimism; now they will need a strong dose of realism so that they can free up cash. Companies will need all available internal forecasting capabilities to stress test their capital requirements on weekly and monthly bases.

As the finance function works on accounts payable and receivable, supply-chain leaders can focus on freeing up cash locked in other parts of the value chain. Reducing finished-goods inventory, with thoughtful, ambitious targets supported by strong governance, can contribute substantial savings. Likewise, improved logistics, such as through smarter fleet management, can allow companies to defer significant capital costs at no impact on customer service. Pressure testing each supplier's purchase order and minimizing or eliminating purchases of nonessential supplies can yield immediate cash infusions. Supply-chain leaders should analyze the root causes of suppliers' nonessential purchases, mitigating them through adherence to consumption-based stock and manufacturing models and through negotiations of supplier contracts to seek more favorable terms.

Building resilience for the future

Once the immediate risks to a supply chain have been identified, leaders must then design a resilient supply chain for the future. This begins with establishing a supply-chain-risk function tasked with assessing risk, continually updating risk-impact estimates and remediation strategies, and overseeing risk governance. Processes and tools created during the crisis-management period should be codified into formal documentation, and the nerve center should become a permanent fixture to monitor supply-chain vulnerabilities continuously and reliably. Over time, stronger supplier collaboration can likewise reinforce an entire supplier ecosystem for greater resilience.
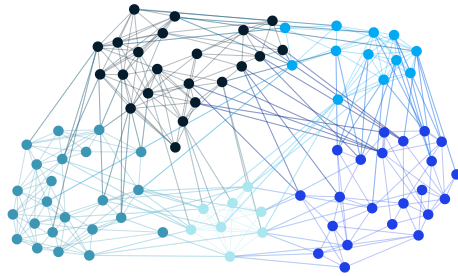
During this process, digitizing supply-chain management improves the speed, accuracy, and flexibility of supply-risk management. By building and reinforcing a single source of truth, a digitized supply chain strengthens capabilities in anticipating risk, achieving greater visibility and coordination across the supply chain, and managing issues that arise from growing product complexity. For example, Exhibit 3 shows how a digitally enabled clustering of potential suppliers shows the capabilities they have in common.
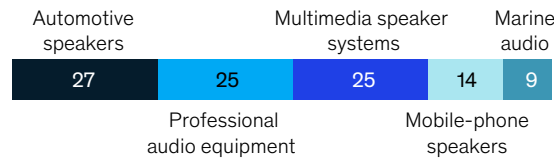
Exhibit 3

Cluster maps reveal alternative sourcing options for all the materials affected.

Cluster map, durable speaker suppliers, illustrative (n = 87 suppliers)

● Company   — Common capabilities

Cluster characteristics, %

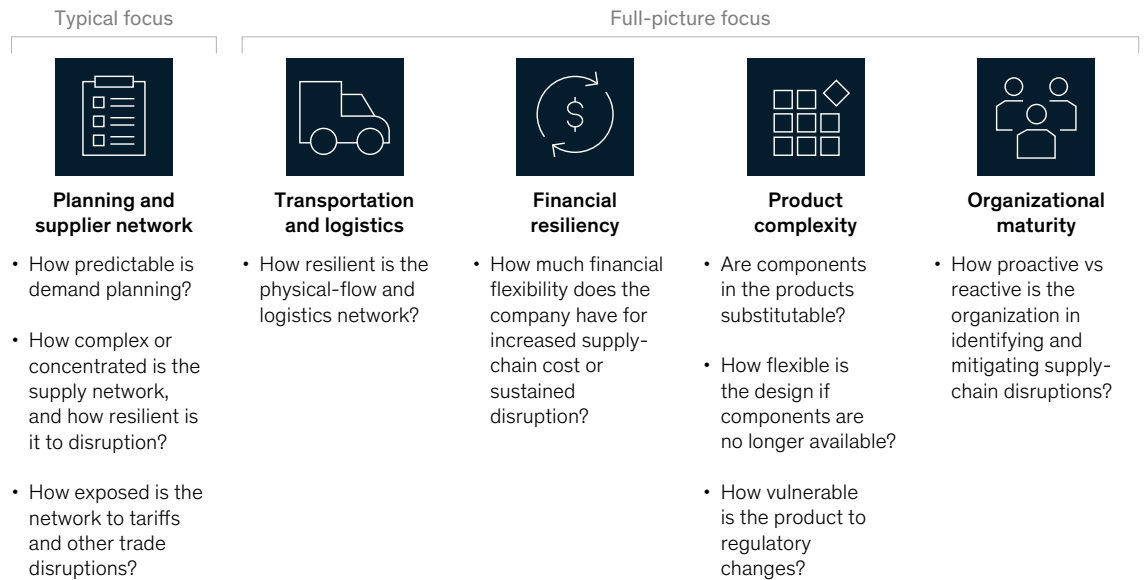| Automotive speakers		Multimedia speaker systems		Marine audio
27	25	25	14	9
	Professional audio equipment		Mobile-phone speakers	

Estimating a medtech company's degree of connectiveness helped it expand its supplier base by 600 percent, while an industrial-tools maker identified request-for-qualifications-ready suppliers for highly complex parts that it had been previously unable to source.

Finally, when coming out of the crisis, companies and governments should take a complete look at their supply-chain vulnerabilities and the shocks that could expose them much as the coronavirus has. Exhibit 4 describes the major sources of vulnerability. The detailed responses can reveal major opportunities—for example, using scenario analyses to review the structural resilience of critical logistics nodes, routes, and transportation modes can reveal weakness even when individual components, such as important airports or rail hubs, may appear resilient.

Exhibit 4

Supply-chain vulnerability occurs across five dimensions.

Drivers of potential vulnerability

Typical focus	Full-picture focus			
Planning and supplier network	**Transportation and logistics**	**Financial resiliency**	**Product complexity**	**Organizational maturity**
• How predictable is demand planning? • How complex or concentrated is the supply network, and how resilient is it to disruption? • How exposed is the network to tariffs and other trade disruptions?	• How resilient is the physical-flow and logistics network?	• How much financial flexibility does the company have for increased supply-chain cost or sustained disruption?	• Are components in the products substitutable? • How flexible is the design if components are no longer available? • How vulnerable is the product to regulatory changes?	• How proactive vs reactive is the organization in identifying and mitigating supply-chain disruptions?

Organizations should build financial models that size the impact of various shock scenarios and decide how much "insurance" to buy through the mitigation of specific gaps, such as by establishing dual supply sources or relocating production. The analytical underpinnings of this risk analysis are well understood in other domains, such as the financial sector—now is the time to apply them to supply chains.

———————

Triaging the human issues facing companies and governments today and addressing them must be the number-one priority, especially for goods that are critical to maintain health and safety during the crisis. As the coronavirus pandemic subsides, the tasks will center on improving and strengthening supply-chain capabilities to prepare for the inevitable next shock. By acting intentionally today and over the next several months, companies and governments can emerge from this crisis better prepared for the next one.

Knut Alicke is a partner in McKinsey's Stuttgart office, **Xavier Azcue** is a consultant in the New Jersey office, and **Edward Barriball** is a partner in the Washington, DC office.

Coronavirus and technology supply chains: How to restart and rebuild

As COVID-19-related restrictions begin to lift in Asia, how can organizations resolve supply-chain issues at pace?

by Didier Chenneveau, Karel Eloot, Jean-Frederic Kuentz, and Martin Lehnich

For the technology industry, the effects of the coronavirus (SARS-CoV-2), which causes COVID-19 disease, started to take hold in January when China—a critical link in the global technology chain—began reporting more cases. And while the country's early lockdowns and quarantines are slowly beginning to lift, the pandemic's international expansion is leading to new restrictions across the globe that are weighing on business activity. Consequently, the technology supply chain now faces a new set of challenges.

China itself poses several operational questions. Over the past few weeks, major progress in reducing labor constraints in China occurred (Exhibit 1). We estimate that by March 24, 2020, around 75 percent of the country's workforce had returned to work. That is a major improvement over the situation in February 2020, when less than 20 percent of workers were back on the job. But many workers are new recruits who require training, which will likely take several more weeks. And Wuhan—the major manufacturing center where the outbreak began—remains far behind, with just around 24 percent of labor having returned to work.
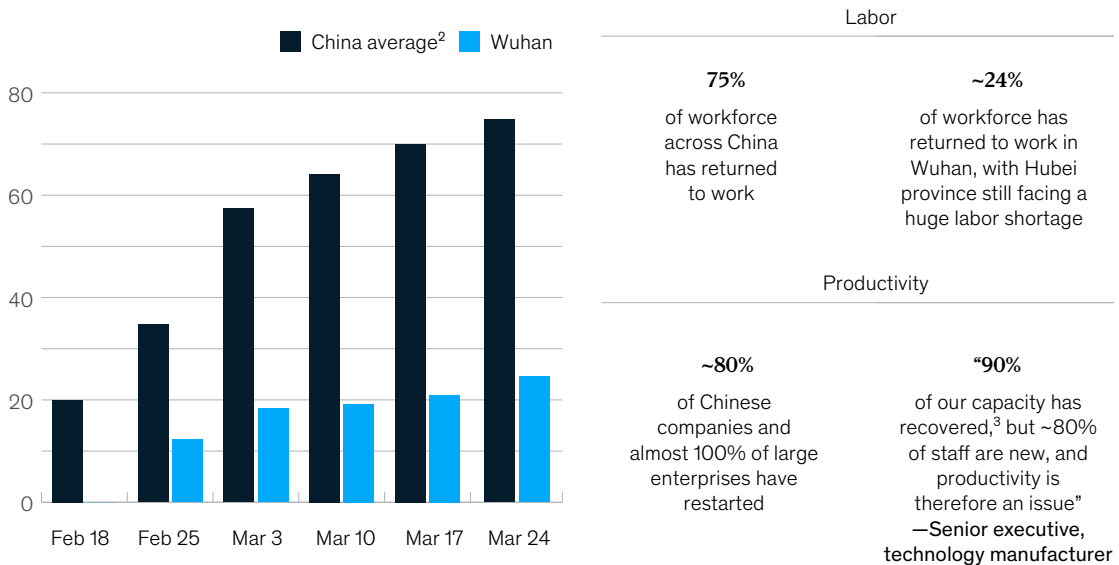
Supplies of materials and components, especially those that are highly labor intensive, are also limited, potentially creating a second wave of disruption—even assuming that labor shortages continue to abate. For global manufacturers, highly customized, low-automation components may remain out of stock if Chinese suppliers cannot recover quickly enough. And logistics challenges mean that delivering even readily available components to production lines overseas is likely to take longer and cost more than it did in the past.

Finally, liquidity challenges loom, particularly among small and medium-size enterprises (SMEs). These companies, which mainly produce labor-intensive parts, are crucial in the upstream technology supply

Exhibit 1

China as a whole is recovering, but Hubei and workforce productivity are still facing challenges.

Return-to-work index,[1] %

■ China average[2] ■ Wuhan

Labor

75%	~24%
of workforce across China has returned to work	of workforce has returned to work in Wuhan, with Hubei province still facing a huge labor shortage

Productivity

~80%	"90%
of Chinese companies and almost 100% of large enterprises have restarted	of our capacity has recovered,[3] but ~80% of staff are new, and productivity is therefore an issue" —Senior executive, technology manufacturer

[1] Accumulated active populations after Jan 31 ÷ baseline active population (Dec 2019).
[2] Excluding Hong Kong, Macau, and Taiwan.
[3] Compared to before Chinese New Year (Jan 25, 2020).

Source: Baidu; expert interviews; McKinsey analysis

chain, but their limited access to capital makes them exceptionally vulnerable to cash squeezes.

Precedent shows that those sorts of problems are solvable with the right interventions. A Japanese technology manufacturer's experience in recovering from the 2011 Tohoku earthquake, tsunami, and nuclear disaster illustrates the critical elements. Despite the fact that virtually all of the company's productive capacity was in Japan—much of it near the earthquake's epicenter—it applied a mix of short- and mid- to long-term responses that allowed it to restore all production within a month while building flexibility and resilience against further shocks.

Short-term measures

In the short term, the priority for technology companies today is to restart and ramp up production. The question is how to do so while minimizing further disruption and keeping workers safe.

The first step is building a central nerve center to create the transparency required for agile decision making and to oversee the implementation of both strategic and tactical actions. That step enables better scenario planning. Next, the company examines demand with a skeptical eye, understanding customers' tendency to overorder and looking for opportunities to manage demand to match supply better. In parallel, specialists must assess components for criticality and risk, reaching as deep into the supply chain as possible to create a full picture. Finally, from those insights, it's possible

to optimize limited production capacity. Follow-ups will flow on a circular basis through the nerve center to continually assess parts availability and demand.

Build a nerve center

By bringing top management together in a single, flexible structure, a nerve center enables companies to navigate more efficiently through dynamic situations, guiding the whole organization to understand, react, and improve in a timely manner. For the supply chain, the nerve center will cover multiple priorities, ranging from conducting scenario-based sales and operations planning to overseeing parts availability, logistics, and supplier qualifications. Across all these activities, however, the nerve center acts as a single, authoritative information source, point of contact, and decision-making venue.

The nerve center can thereby break through logjams, particularly ones at the boundaries between functions. For example, the nerve center could bring supply-chain and procurement heads together to identify the most urgent transport contracts requiring renegotiation in order to secure alternative shipping routes. And it can resolve questions about which manufacturing sites should be reactivated first—and to what degree—bearing in mind supply constraints.

Conduct scenario analyses to identify specific actions

The information that the nerve center brings together will be crucial in conducting scenario

The nerve center can thereby break through logjams, particularly ones at the boundaries between functions.

analysis to navigate the supply chain with clear priorities. As of this writing, the most likely scenarios for the COVID-19 pandemic's further global development appear to be those in which the COVID-19 spread is eventually controlled, and catastrophic structural economic damage is avoided. But recovery may be slow or muted rather than strong, and the virus may recur. Moreover, the scenarios describe a global average, with situations varying by country and region.

In a slow-recovery scenario, China and East Asia continue their current recovery and control the virus by the second quarter of 2020, while European and US case-count growth rises rapidly through mid-April. The resulting supply-chain scenario is that China and East Asia start recovery, but supply chains remain impaired, especially by the unavailability of parts coming from Europe or the United States and by logistics bottlenecks (particularly in air freight). European and US large-scale quarantines, travel restrictions, and physical-distancing measures subsequently drive a drop-off in consumer spending and business investment in 2020 for consumer electronics.

Should the virus recur, China and East Asia face a surge of reinfection as they attempt to restart economic activity. In addition, disruption of the supply of critical components from Europe and the United States happens across the board over an extended period of time. Under a possible, more negative scenario, China and East Asia experience double-dipping slowdowns, global supply chains are almost completely disrupted, bankruptcy of smaller suppliers becomes endemic, and global sourcing alternatives and diversification become very problematic.

These broad scenarios will require refinement and adaptation for each company's unique circumstances, bearing in mind that the underlying drivers for the scenarios may have very different implications, depending on factors such as a company's primary sources of demand. Particularly if the economic impact lasts for more than a quarter or two, understanding the interdependencies will become more critical.

Understand and reshape demand to fit supply
At times of supply uncertainty, customers have every incentive to inflate demand in a bid to improve their odds of getting the amount of supply they need (or believe they need)—and to build up a buffer as well. Therefore, demand planners need to work with sales departments and data analysts to identify and correct the inflated demand (Exhibit 2).

The first—and simplest—step is to compare each customer's current order with past purchases to see just how inflated the current requests are. Additional refinement can yield further opportunities to reduce order sizes and production runs. For example, by pairing regression models with machine learning, planners can build a range of different demand curves that would apply under the current economic circumstances. Working with the sales department to review promotion plans and budgets can help spread high demand over a longer time period and reduce abnormal demand.

The last step is to work with other stakeholders, such as manufacturing, marketing, and sales functions, to evaluate demand-reshaping possibilities. That could include product substitutions to emphasize products that share similar specifications, thereby avoiding or reducing machine changeover time. For a laptop manufacturer, this may require persuading customers to accept a different model—perhaps at lower profitability—so that the manufacturer can rebuild capacity.
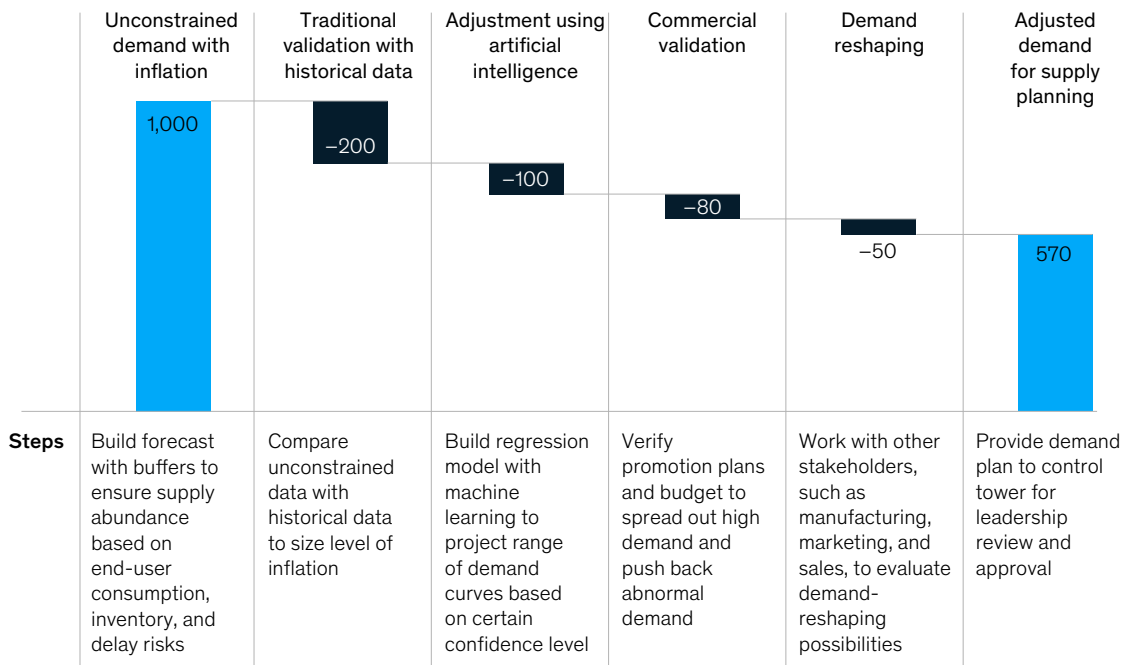
Assess components for criticality and risk at each tier
It is of critical importance that companies understand the risk exposure of components and suppliers at each tier so that they can calculate value at risk in case of a supply-chain disruption. By understanding value at risk and prioritizing the most critical components, organizations can then try to build up critical inventory, with help from distributors, brokers, or alternative sources, despite the potential cost increase.

The example in Exhibit 3 illustrates how this analysis works. A detailed tree, populated by bill-

Exhibit 2

Demand planners need to work with sales and data analysts to identify and correct inflated demand.

Critical steps in validating demand (not exhaustive), *illustrative units*

	Unconstrained demand with inflation	Traditional validation with historical data	Adjustment using artificial intelligence	Commercial validation	Demand reshaping	Adjusted demand for supply planning
	1,000	−200	−100	−80	−50	570
Steps	Build forecast with buffers to ensure supply abundance based on end-user consumption, inventory, and delay risks	Compare unconstrained data with historical data to size level of inflation	Build regression model with machine learning to project range of demand curves based on certain confidence level	Verify promotion plans and budget to spread out high demand and push back abnormal demand	Work with other stakeholders, such as manufacturing, marketing, and sales, to evaluate demand-reshaping possibilities	Provide demand plan to control tower for leadership review and approval

of-materials data, allows supply-chain staff to see each individual component down to third- and fourth-tier suppliers. For each item, the team then estimates risk along the dimensions of product technology, transport, supplier landscape, and safety relevance—for each dimension, the more specialized the product's requirements, the higher the risk. So for example, a camera module using relatively generic technology, available locally from several suppliers, and requiring no safety testing would be of very low risk. Conversely, the latest integrated-circuit chipset, built at a single overseas fabricator site, would get a high score for risk.

Optimize limited production capacity
After obtaining the adjusted demand figures, manufacturing departments should allocate capacity based on an integrated, quantitative production-prioritization matrix. Here, it is necessary to strike a fine balance between

customer needs and production efficiency, while also considering each customer's strategic importance, related customer-service implications, component availability, and production efficiency.
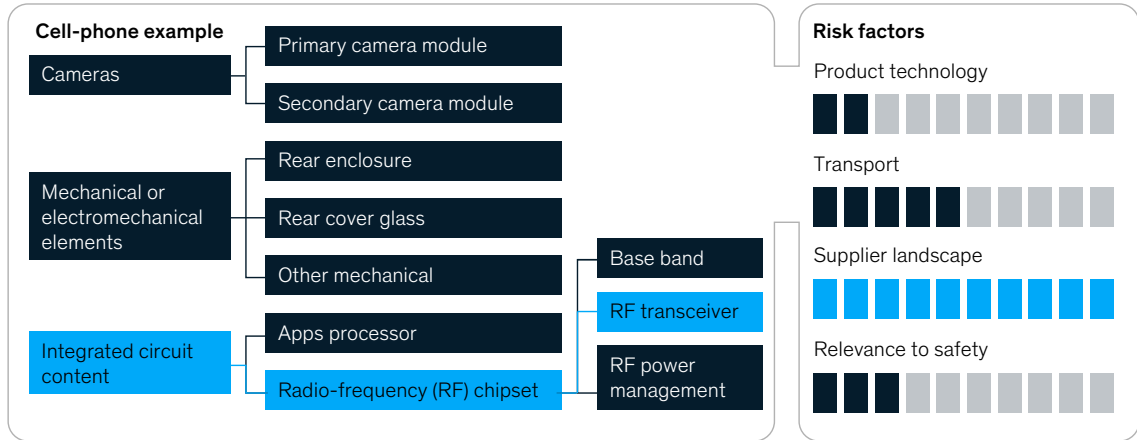
Consider a manufacturer that is facing a dozen orders, each for more than 10,000 units across three major product types. Because of supply shortages, realistic productive capacity is only about 50,000 units—less than half of the cumulative orders.

Commercial considerations matter most. One important customer is experiencing a stockout so severe that it has threatened to stop offering the product if it isn't replenished. That order goes to the front of the queue: it's for one of the manufacturer's core products, and the manufacturer can't afford to lose the relationship. Manufacturability then enters the equation. The priority order is produced, and
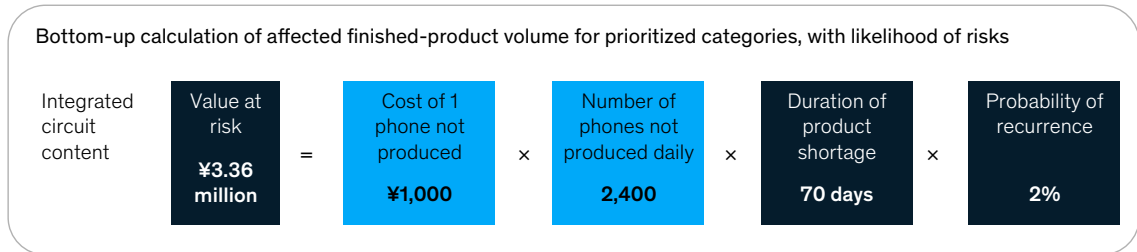
Exhibit 3

To quantify a supply chain's vulnerability, analyze components' risk exposure by tier.

2-step method to identify crucial parts and value at risk

1 Identify bottlenecks and risk factors in supply chain   Quantify risk factors

Cell-phone example

| Cameras | Primary camera module |
| | Secondary camera module |

Mechanical or electromechanical elements	Rear enclosure
	Rear cover glass
	Other mechanical

| Integrated circuit content | Apps processor |
| | Radio-frequency (RF) chipset |

Base band
RF transceiver
RF power management

Risk factors

Product technology

Transport

Supplier landscape

Relevance to safety

2 Calulate risk exposure

Bottom-up calculation of affected finished-product volume for prioritized categories, with likelihood of risks

| Integrated circuit content | Value at risk **¥3.36 million** | = | Cost of 1 phone not produced **¥1,000** | × | Number of phones not produced daily **2,400** | × | Duration of product shortage **70 days** | × | Probability of recurrence **2%** |

the remaining available capacity goes to the next three orders for the same product family, making them easier to produce: one order for an overseas customer experiencing a stockout, another that was bundled with the top-priority order, and a third for a nonpriority customer whose order could be filled by the same manufacturing run.

The remaining orders above the daily capacity fall into backlog for next-day production, unless pushed again by new prioritization from customers or changes in availability of parts—illustrating an urgent need for frequent (ideally daily) sales and operations planning.

Recommended actions over the medium term

As time passes, organizations will be able to move out of the current crisis mode. In the medium term—a period of the next two to four months—a further set of actions should be taken. They should include the conversion of the nerve center into a midterm risk-management process, with business continuity tested on a regular basis.

Convert daily firefighting into reliable risk management

While companies use temporary processes to conduct short-term risk management, they must gradually streamline, over a period of two

to four months, this daily firefighting into a more formalized risk-management process. They can use the knowledge and lessons learned from their short-term actions to form the basis for building a more resilient supply chain. This should include building a risk-management team—in addition to the temporary taskforce managing catastrophic events—to assess supply-chain risk, with a clear information cascade. There should also be regular interfacing with other functions, including sales and marketing, finance, HR, R&D, and IT, to ensure and encourage a high awareness of the importance and implications of proper supply-chain risk management.

Additionally, the team should communicate frequently with other stakeholders, such as policy makers, investors, and others, to ensure that they are aware of any changes that will affect them as early as possible. The team should also identify any relevant new tax and government incentives that could support the company, either directly or indirectly through impact on others in the supply chain.

Part of building a more robust supply-chain risk-management process will also include building structural flexibility. When possible, companies should implement a multisource approach for critical components, along with local supply-chain monitoring supported by local sourcing hubs.

Support financially troubled SME suppliers
Because few SMEs have excess cash on hand—or other easily accessed forms of liquidity— the disruptions that have already occurred are likely to have a huge impact on their financial health. The early signs point to sustained pain, with some Chinese SMEs already declaring bankruptcy, while others report facing high penalties from international customers after failing to fulfill committed orders.

Manufacturers can often provide essential support at comparatively low cost and risk to themselves, first by taking simple actions, such as increasing accounts-payable periods for the suppliers most in need of cash. For those that need greater support, providing low-interest loans in exchange for supply exclusivity and stability can help both sides achieve important objectives.

Preparation for the long term
Building resilience will require tech companies to invest in two interconnected, longer-term supply-chain realignments: managing supply-chain-footprint risk while increasing supply-chain-planning agility.
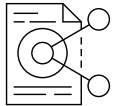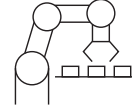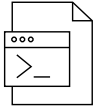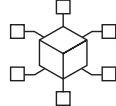
Managing supply-chain-footprint risk starts with the familiar task of optimizing production footprints to reduce cost, mitigate risk, and (when possible) capture trade benefits. For today's manufacturers operating a global supply chain, the most critical requirement is to build an agile, centralized footprint-simulation capability based on advanced modeling software. This new capability will enable leaders not only to understand and measure the risk in the current supply chain but also to simulate and run multiple scenarios to model the impact from geopolitical events, such as trade disputes, major disruptions of manufacturing assets or logistic routes, and supplier defaults. While most companies historically reviewed their footprints on a yearly basis (at best), we believe that developing a footprint-simulation capability will be key to coping better with uncertainty and being able to adapt to a fluid environment in an agile way.

Once the risks are identified, measured, and ranked, companies can consider hedging and other mitigation options, such as acquiring extra tooling or cold assets and negotiating buy options with key suppliers. Careful application of advanced analytics can also help companies identify qualified suppliers in days rather than months—and then redesign transport networks to move the supplies more quickly to factories and customers.

Increasing supply-chain-planning agility by using digital tools allows rapid replanning of the supply chain from end to end, including breaking down information silos and enabling real-time, concurrent planning of demand, manufacturing, parts, and logistics. The result is to accelerate the sales- and operation-planning drumbeat from quarterly or monthly to biweekly—or even daily. Again, new technologies play a critical role, allowing manufacturers to build robust data links among logistics, manufacturing, procurement, planning, and

Exhibit 4

Broadly speaking, agility comes from investments in four areas: new data sources, automation, new algorithms, and ubiquitous access.

How to accelerate supply-chain agility

1	**2**	**3**	**4**
New data sources	**Automation**	**New algorithms**	**Ubiquitous access**
Integrate additional sources of data into supply-chain management to accelerate supply-chain response time	Deploy digital solutions to automate end-to-end supply chain for better productivity and risk mitigation	Apply new algorithms driven by in-memory computing and cloud processing power to improve accuracy and transparency	Establish multiple secured data interfaces to stay connected with real-time supply-chain status remotely
• Actual supply-chain status (eg, demand, inventory, shipment) • Promotional data, demand-variation data • Social-media data	• Robotics (eg, warehouse automation, industrial robots) • Process automation (eg, electronic data interchange, "no touch" planning)	• Interactive, real-time planning • Improved accuracy in demand forecasts	• Web and cloud applications • Mobile applications • Secured remote access

sales functions, with the ambition to get real-time visibility on the end-to-end supply-chain situation and ensure faster and better decision making.

Investments in the integration of four areas—new data sources, automation, new algorithms, and ubiquitous access—can enable increased agility of supply-chain planning (Exhibit 4). New data sources can improve and accelerate decision making, automation can improve productivity and provide risk mitigation, new algorithms can enable accuracy in planning, and ubiquitous access can reduce reaction times. These four investment areas are neither interdependent nor sequentially required, but a coordinated approach is necessary to reap maximum impact at scale.

Early adopters of innovative manufacturing methodologies are making their entire value chains more resilient, integrating production and supply

into a seamless whole that responds rapidly to changes in demand and supply.

————————

While the coronavirus pandemic is the most wide-reaching crisis to affect supply chains in recent memory, it is not the only incident that will have an impact: Brexit, international trade disputes, natural disasters, and other events are all affecting today's complex supply chains to varying degrees.

Additionally, the COVID-19 situation is continuing to evolve on a daily basis. While recovering from this current crisis is crucial, it is more important that organizations act now to mitigate against future shocks. Companies should design and build their future supply chains with risk management firmly in mind.

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Five actions retail supply chains can take to navigate the coronavirus pandemic

Retail supply chains are grappling with the humanitarian impact of the outbreak, as well as new operational risks. Five actions can help retailers bring goods to communities and help employees.

by Manik Aryapadi, Vishwa Chandra, Ashutosh Dekhne, Kenza Haddioui, Tim Lange, and Kumar Venkataraman

As the coronavirus outbreak has spread aand its humanitarian impact has grown, retailers have stepped up their efforts to provide consumers with essential goods and to protect the health and well-being of the communities they serve. Particular challenges have arisen in global retail supply chains, where the pandemic's far-reaching effects have weighed heavily on the health and well-being of employees and jeopardized livelihoods and economic lifelines in many communities.

Retailers are now taking extraordinary measures to keep goods moving to store shelves and consumers' doorsteps. Supply-chain leaders are creating transparency and building rapid-response capabilities to mitigate the short-term fallout from the crisis. We focus in this article on the five actions retailers are taking to resolve the immediate challenges that COVID-19 presents to supply-chain workers, business partners, and operations. (In a subsequent article, we will examine how supply-chain leaders at retail companies can chart a path to the next normal, building resilience and returning the supply chain to full effectiveness while reimagining and reforming supply-chain operations to improve their performance.)

Changes in consumer spending during the outbreak

Retailers' supply-chain difficulties have largely arisen as big shifts in consumer behavior and stepped-up health restrictions have rippled back through their operations. One noteworthy shift has been an abrupt swing in purchasing patterns. Sales of nondiscretionary products, such as food, household, and personal-care products, have spiked, while sales of discretionary items, such as apparel and furnishings, have tailed off.

Our consumer research indicates that these initial shifts could persist in the very near term—though it remains to be seen how the restrictions that some

governments have placed on store openings and order deliveries might further influence consumer behavior. In recent McKinsey surveys of consumers in Italy, Spain, the United Kingdom, and the United States, respondents were more likely to say that they would increase their spending on groceries than to decrease it during the next two weeks. For most discretionary consumer-spending categories, including restaurants, apparel, and furnishings, respondents were more likely to say they would decrease spending (Exhibit 1).[1]

Consumers have also said they will shift spending among channels. In the surveys noted above, McKinsey asked consumers whether they were planning to increase or decrease their in-store and online spending on various types of goods during the next two weeks. Only respondents in Italy and Spain said they were likely to increase their *in-store* spending on nondiscretionary goods, such as groceries and household supplies. Respondents in the United Kingdom and the United States, by contrast, were more likely to say they would increase their *online* spending on groceries and household items. And respondents in all four countries said they were likely to increase their online spending on a wider variety of items.[2]

Other research underscores these early shifts. An analysis of retail traffic in major US metropolitan areas between February 19th and March 20th showed increases in traffic at grocery stores and warehouse chains, while movie theaters, restaurants and malls remained closed. Downloads of delivery apps for grocery retailers increased by 100 to 200 percent over the same two-week period.

Stores, logistics systems, distribution facilities, and supplier networks weren't engineered for the rapid shifts in demand patterns we are seeing today. To adjust, retailers are retooling every aspect of their supply chains, from procurement to customer service. As supply chains for nondiscretionary
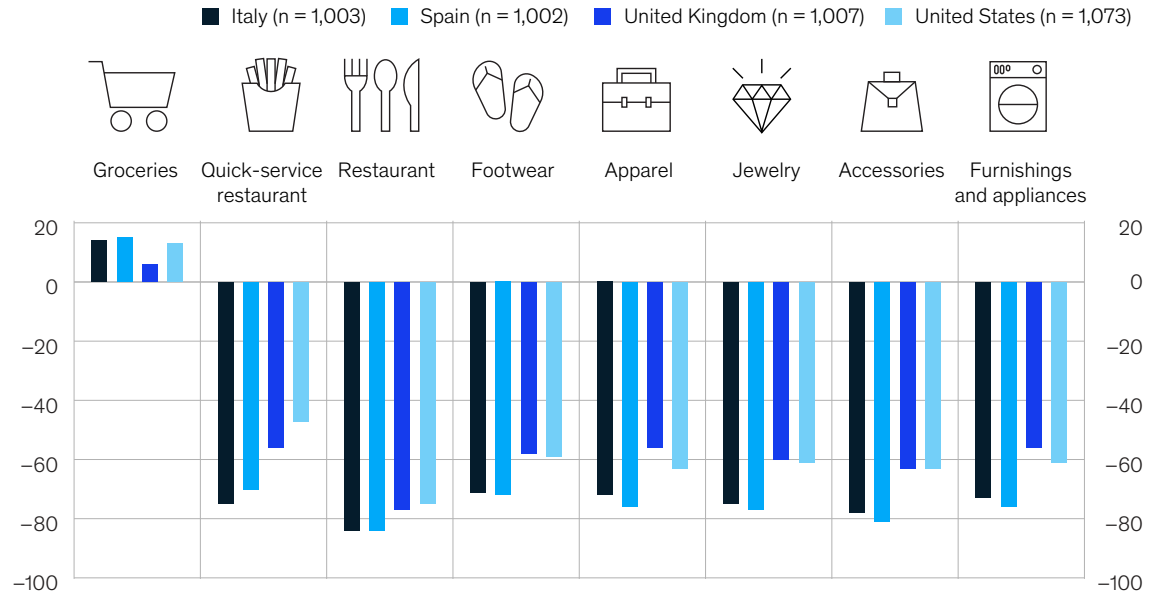
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[1] "US consumer sentiment during the coronavirus crisis," March 2020, McKinsey.com; "Spanish consumer sentiment during the coronavirus crisis," March 2020, McKinsey.com; "Italian consumer sentiment during the coronavirus crisis," March 2020, McKinsey.com; "UK consumer sentiment during the coronavirus crisis," March 2020, McKinsey.com.
[2] Ibid.

In several countries, consumer surveys show a likelihood of greater spending on groceries and less spending in discretionary categories.

Net intent to change spending over the next 2 weeks, by country, by category,[1] % change

■ Italy (n = 1,003)   ■ Spain (n = 1,002)   ■ United Kingdom (n = 1,007)   ■ United States (n = 1,073)

| Groceries | Quick-service restaurant | Restaurant | Footwear | Apparel | Jewelry | Accessories | Furnishings and appliances |

[1] Net intent is calculated by subtracting the percentage of respondents stating they expect to buy more from the percentage of respondents stating they expect to buy less.

Source: McKinsey Marketing & Sales surveys conducted March 21–23, 2020; all data are weighted to match countries' populations of people 18 years and older

goods have ramped up activity, companies have had to balance the surge in demand while also prioritizing the protection of their employees' health and well-being across the supply chain. On the other hand, supply chains supporting discretionary goods have redeployed resources to support online orders or selectively ramped down operations to deal with the drop in demand.

How retail supply chains are adapting: Five priority areas

The pandemic has forced retail executives to mount urgent efforts to adapt their supply chains, whether by revising their purchase orders and merchandising plans or by reallocating all kinds of

resources—working capital, inventory, employees, transport capacity—to where they are needed most (Exhibit 2). We explore these changes in detail below.

Suppliers: Secure demand

Surging demand for nondiscretionary goods has created network-wide stockouts for some retailers. Responding to the dip in on-shelf availability, retailers are working closely with companies across their supplier bases, including consumer-packaged-goods (CPG) makers, distributors, and co-manufacturers. For the most important product categories, category captains are holding daily meetings with strategic suppliers to work through the options for securing an adequate supply of essential high-demand items.

Exhibit 2

Immediate action across the supply chain can help retailers meet consumer demand during the COVID-19 pandemic.

Retail-supply-chain changes   ● Nondiscretionary categories   ● Discretionary categories

Suppliers
- ● Establish daily meetings with strategic suppliers
- ● Reduce product variety
- ● Reduce on-time, in-full requirements, as well as payment terms for key suppliers
- ● Mitigate risk for existing orders, in collaboration with suppliers

Merchandising
- ● Revise buy plans and reallocate staff toward high-demad categories
- ● Override algorithms to redirect inventory to high-density areas
- ● Dial down near-term buy plans to preserve cash
- ● Anticipate future increases in sales and adjust buy plans accordingly

Distribution
- ● Retrain employees and redeploy them to distribution centers in high-demand areas
- ● Raise wages and make temporary hires
- ● Maintain good workplace hygiene
- ● Cross-train store and back-office personnel to assist with e-commerce
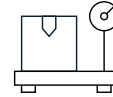
Logistics
- ● Allocate more transport capacity to high-demand items
- ● Have suppliers deliver directly to stores
- ● Stage products at strategic hub stores to feed smaller stores
- ● Explore alternative and supplemental delivery options
- ● Offer transportation capacity if private fleet is available to support movement of critical goods

Fulfillment
- ● Relax same-day/next-day delivery requirements
- ● Optimize routing and accommodate more delivery slots
- ● Enforce order maximums
- ● Expand fulfillment and return options to give customers flexibility

The first and foremost priority for retailers operating across food, drug, and mass (FDM) categories is to secure a fast and reliable supply. Retailers are taking several steps to do so. One is simplifying their SKU profiles to reduce variety and boost quantities, which helps suppliers to accelerate the processing of orders. In addition, several retailers are easing payment terms, widening delivery-appointment windows, and relaxing on-time, in-full (OTIF) requirements.

A leading mass retailer is pursuing all these measures with a special focus on improving its on-shelf availability and its replenishment speed. It is also redirecting its resources, including capital and staff, from nonessential to essential categories. Another leading producer of canned goods is holding daily "stand-up" meetings with a regional grocer to foster transparency and open communication.

Declining sales of nondiscretionary goods, on the other hand, have put pressure on the cash flows of retailers that sell or specialize in these items. To conserve cash, these retailers can remove incentives for on-time deliveries, suspend credit extensions, and do more business with suppliers that have relatively healthy cash reserves. Some retailers are counseling their suppliers to improve their management of inventory (including commodity products), advising suppliers not to buy raw materials, so they can avoid deepening their cash deficits. Retailers can also raise cash by working with their distribution partners to sell off excess inventory.

As a last resort, retailers might explore delaying or canceling orders—an approach that poses some risk to their supplier bases. Multiple suppliers in Asia are shutting down operations as purchase orders

are being canceled or pushed out. A leading apparel retailer based in North America, for example, is working closely with its vendor base to review 40 percent of its buys for the upcoming fall season while simultaneously pruning its assortment for spring 2021. These are not easy choices to make for either party and would require collaboration among retailers and vendors to benefit both sides.

Merchandising operations: Redirect inventory
As retailers recalibrate their product orders to line up with consumer demand, they will need to cascade the changes across purchasing, planning, and inventory-management operations. For nondiscretionary goods, retailers are revising their purchasing plans to favor items in high demand and to direct more of their inventories toward locations where sales are especially brisk.

To move inventory around quickly, retailers might have to bypass or override their inventory-replenishment and inventory-allocation algorithms. For example, one of North America's leading retailers is actively deploying inventory across the network to regions with the biggest product-availability deficits. In some instances, retailers will also need to reassign their merchandising-operations staffs to have enough coverage of key categories and products—a step that can require rapid onboarding and cross-training.

In addition, we are seeing retailers take money previously earmarked for in-store marketing activities and use it to build the operational flexibility they need to improve on-shelf availability for essential items. For example, a leading grocer's category teams are reallocating shelf space for canned goods and working closely with suppliers to focus on availability and replenishment speed rather than promotions.

Some merchandising moves for discretionary categories resemble those for essential-goods categories. To conserve cash, retailers can sell more merchandise they already own by reallocating inventory among geographies. They can also dial down purchasing plans for the near term. But retailers selling discretionary goods will also need to plan their strategic buys for later periods, so that they don't run out of inventory when consumer spending rebounds.

One fashion retailer's response to the outbreak reflects all these moves. The company is selectively reallocating its financial and human resources to support e-commerce operations while changing its inventory spending to adjust to the shift to online purchases, driven primarily by store closures. The retailer is also adjusting its longer-term purchases, in the expectation that the pandemic will accelerate the adoption of e-commerce.

As retailers recalibrate their product orders to line up with consumer demand, they will need to cascade the changes across purchasing, planning, and inventory-management operations.

Distribution: Add capacity—safely

Distribution is the supply-chain segment where demand trends for nondiscretionary and discretionary goods begin to overlap significantly. We've seen some companies reassign current employees to have more capacity in nondiscretionary categories where goods are selling fastest. (In the case of discretionary-goods retailers, some are choosing to cross-train and reassign back-office and store personnel to support e-commerce operations.)

Some retailers have temporarily moved their office workers into distribution centers to perform jobs like operating forklifts, in addition to hiring associates from discretionary-goods sectors, where demand has tapered off. For example, a regional grocery retailer has been hiring fulfillment specialists from other retail sectors, including fashion and home furnishings, which have been hard hit by the crisis. The grocery retailer is quickly retraining these new workers to support pick or pack operations for the delivery of online orders.

Keeping distribution-center workers healthy during the pandemic requires taking added and necessary precautions. Tactics include staggering shifts by short intervals, so that fewer people occupy locker rooms and break rooms at the same time, as well as installing partitions to separate workers physically. A retailer, for example, has been offering day-care benefits and one-time cash incentives and is staggering shifts to improve retention and reduce turnover during this critical period.

Maintaining good workplace hygiene is also important. Between shifts, retailers can suspend operations at their distribution centers so that cleaning crews can sanitize equipment. Health screenings can quickly identify workers who are sick. And all staff, whether long-term or temporary hires, should undergo training in proper health procedures and be given the right protective equipment. A leading mass retailer is working closely with its third-party logistics providers and staffing agencies to screen temporary workers

and accelerate hiring so that it can reduce the risk of infection and ensure the continuity of essential business operations.

Logistics: Balance agility and flexibility

Now more than ever, maintaining the flexibility of logistics is essential for limiting disruption to essential services. The surge in demand across nondiscretionary product categories is slowly eating away at excess capacity. In the United States, trucking demand increased by 150 percent, year over year, in March. Freight costs have also spiked, with double-digit percentage increases in spot rates from February to March. The outbound-tender rate-reject index, which measures adherence to contracted rates for shipping, has also increased by 20 percent, indicating that carriers are rejecting contracted rates and instead selling capacity on the spot market.

The best that retailers can hope for in this tightened environment is to secure enough capacity to get essential items on store shelves reliably and swiftly. This can take some creativity—not to mention additional expense. One strategy retailers are adopting is to have suppliers bypass distribution centers and ship goods directly to stores. They are also simplifying assortments and packaging, so that suppliers can make same-SKU full-pallet shipments to hub stores or distributor-consolidation facilities. This approach puts shipping speed ahead of product variety at a time when many consumers would rather have adequate supplies of key items than a wide assortment.

Some retailers of nondiscretionary goods are supplementing their transportation capacity by partnering with discretionary-goods retailers, whose private or dedicated fleets are likely to be underutilized because of lower sales volumes. There are several examples of cooperation across industries to get products on shelves, especially in high-density urban areas. A leading North American quick-service-restaurant chain has offered its transportation capacity to food banks and FDM retailers in key metropolitan areas to help

communities by assisting deliveries of essential items. In the United Kingdom, competition laws are being relaxed so that supermarket chains can cooperate and share transportation resources and depots—and get essential products on store shelves more readily.

Fulfillment: Deliver reliably

Self-isolation, quarantining, and stay-at-home orders during the coronavirus pandemic have all contributed to notable increases in online shopping and local deliveries for nondiscretionary goods. Bringing huge numbers of deliveries to consumers at their doorsteps and modifying retail locations to facilitate curbside pickups are no small changes.

We're seeing retailers of nondiscretionary goods make these changes more successfully by adhering to several practices. One is widening delivery windows from immediate or same-day to two or three days. This allows retailers to rationalize the scheduling and routing of deliveries, so that deliveries in the same area can be grouped together and sent out in one round of drop-offs by the same driver, saving time and mileage. This approach also gives retailers more flexibility, so they can sync order deliveries with the arrival of inventory shipments.

Another practice compensates for the decline in store traffic. By converting some outlets to "dark stores," where workers pick orders, retailers can make good use of their stores' on-shelf inventories and proximity to consumers. To meet the surge in demand, some grocery retailers are also hiring more full-service shoppers, temporarily shifting in-store employees to delivery jobs, or expanding partnerships with gig-economy delivery services. In discretionary-goods categories, retailers are trying various delivery-related promotions to boost sales. One fashion retailer lowered the order size necessary to qualify for free shipments and relaxed return windows to give customers more flexibility.

Not all consumers necessarily want their goods delivered, so retailers must find ways of accommodating those who do visit stores. These approaches include capping purchases of highly sought-after items, reserving certain periods of the day for shoppers at greatest risk of infection, and cleaning and sanitizing stores frequently. Retailers must also protect their employees' health. That might call for shortening store hours to create enough time for thorough cleaning and giving workers extra training in how to avoid infection.

The coronavirus crisis is first and foremost a humanitarian crisis. Retailers have been making sure they are protecting their employees' lives and livelihoods. It's a tough challenge, but their priorities are clear. With creative, resourceful responses to the pandemic, retail-supply-chain leaders can make sure that consumers are able to buy the goods they need while also maintaining the health and safety of both consumers and supply-chain workers. Moreover, the lessons from this challenging time can help retailers make their supply chains more resilient. The next crisis might be no less surprising, but the right plans can keep it from causing as much disruption.

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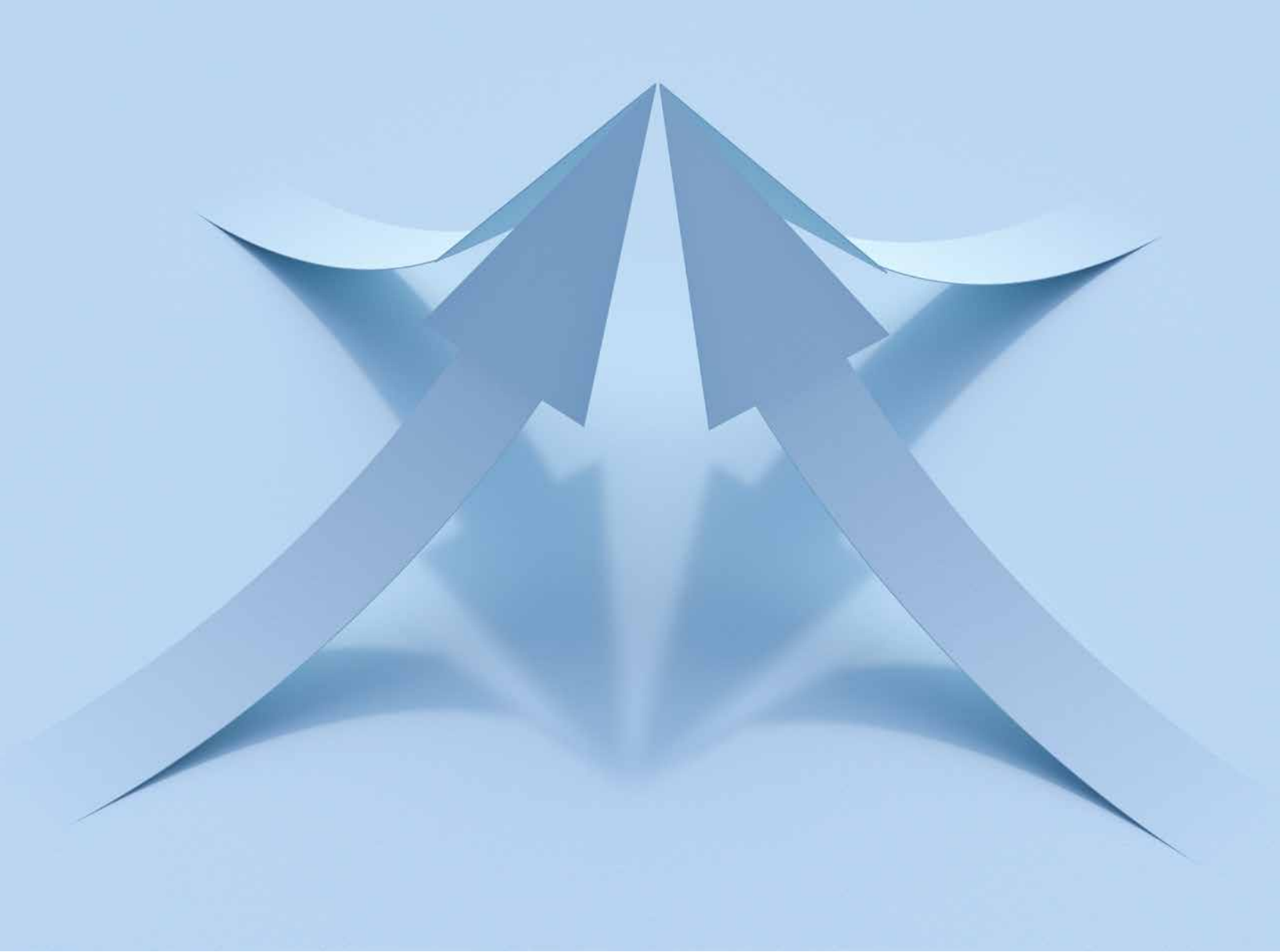
Connecting with customers

How marketing leaders can both manage the coronavirus crisis and plan for the future

In the economic recovery from the pandemic, marketing—the link between businesses and their customers—will play a pivotal role. Planning starts now.

by Julien Boudet, Jonathan Gordon, Brian Gregg, Jesko Perrey, and Kelsey Robinson

The COVID-19 crisis is unprecedented. The speed with which it has spread and its effects on families and daily life have led to a deep sense of fear, anxiety, and confusion. The human toll has devastated many of us and continues to drive home the reality that the coronavirus is a tragedy that is upending lives around the world.

Even as US companies try to get their arms around the human costs as the pandemic continues to spread, they are also struggling to understand the impact on their business and how to react. Marketers—many working remotely from home—are faced with an entirely new situation: How should we be talking to our customers? Where should we be spending marketing dollars and where shouldn't we? How should we be working with our teams and our colleagues across the business? How are we going to stay in business? And all this on top of how can we support our family, friends, communities and planet?

There is much uncertainty about the future. That said, we are likely in the midst of a generation-defining event that will influence how consumers behave for years to come. This means that marketers—as the advocates for the consumer in every business—have a critical role to play as companies shape their response. Marketers will need to be fast and pragmatic to manage the crisis, while also being strategic on how to weather the downturn.

Some facts and hypotheses are emerging that we share in this article. We hope these can help marketing leaders determine what actions they can take and how they can start to prepare for a post-COVID-19 world.

Consumer sentiment and behavior

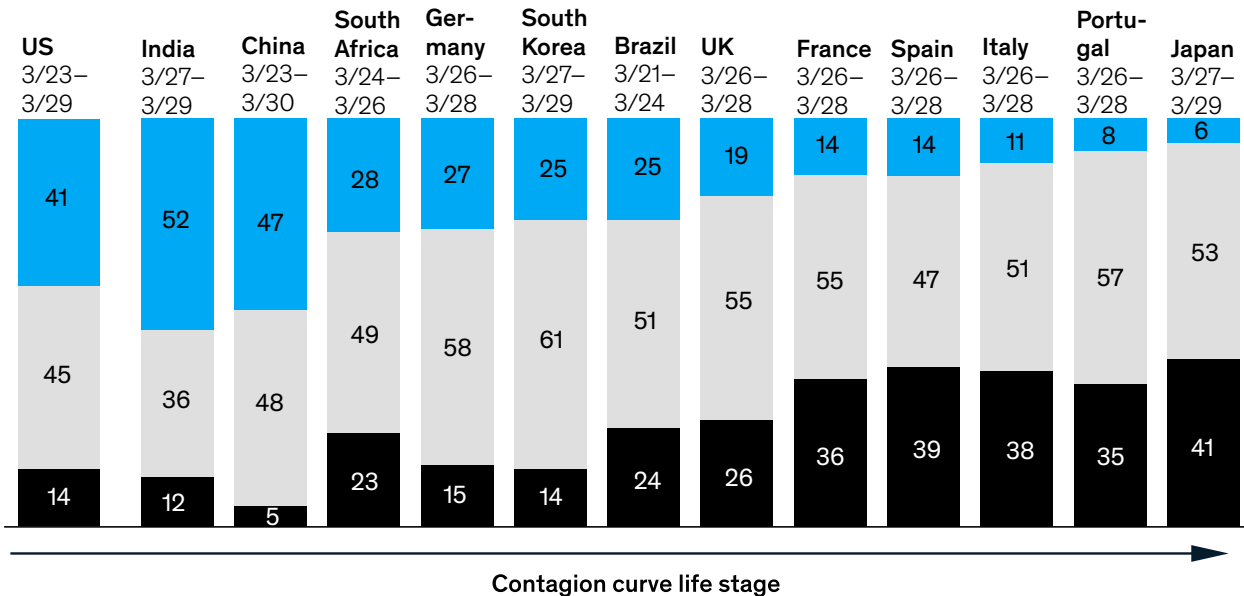Consumer behavior and sentiment have fundamentally changed in a number of key ways:

— *Adjusting to new realities.* US consumer optimism in the economy is declining as the effects of the coronavirus pandemic escalate (Exhibit 1). As of April 1, however, some 75 percent of US consumers believe their finances will be impacted for more than two months by the pandemic, up from 69 percent two weeks before week, and uncertainty about the economy is preventing them from spending, according to McKinsey's consumer-sentiment survey.

— *Spend patterns are unsurprising—but stark, nonetheless.* A short-term boost in spending has been unevenly distributed, with consumers rushing to get must-have-now items while virtually shutting off other categories. Grocery, household products, and home entertainment were the first categories to see consistent increases, while travel, out-of-home entertainment, food service, and even discretionary categories like apparel have cratered (Exhibit 2).

— *Shift to online shopping.* Online is becoming the channel of choice as consumers spend more time at home and there's reason to believe that this behavior shift will endure at some level. Looking at China, which has endured the effects of COVID-19 for longer than the US, consumers have indicated that the rapid changes in shopping habits are likely to stick (eg, more than 55 percent of Chinese consumers are likely to permanently buy more groceries online). Despite the significant shift to digital channels, however, the surge in buying online has not come close to offsetting losses offline, where about 80 percent of shopping traditionally happened.

— *New reality for media usage and advertising.* With more consumers at home, media consumption is changing, too. We are seeing

Exhibit 1

Consumer optimism varies by country but is typically higher at the start and end life stages of contagion curve.

Confidence in own country's economic recovery after COVID-19,[1] % of respondents by country

- ■ **Optimistic:** The economy will rebound within 2–3 months and grow just as strong or stronger than before COVID-19
- □ **Unsure:** The economy will be impacted for 6–12 months or longer and will stagnate or show slow growth thereafter
- ■ **Pessimistic:** COVID-19 will have a lasting impact on the economy and show regression/fall into lengthy recession

	US 3/23–3/29	India 3/27–3/29	China 3/23–3/30	South Africa 3/24–3/26	Germany 3/26–3/28	South Korea 3/27–3/29	Brazil 3/21–3/24	UK 3/26–3/28	France 3/26–3/28	Spain 3/26–3/28	Italy 3/26–3/28	Portugal 3/26–3/28	Japan 3/27–3/29
Optimistic	41	52	47	28	27	25	25	19	14	14	11	8	6
Unsure	45	36	48	49	58	61	51	55	55	47	51	57	53
Pessimistic	14	12	5	23	15	14	24	26	36	39	38	35	41

Contagion curve life stage →

[1] Q: How is your overall confidence level on economic conditions after the COVID-19 situation? Rated from 1 "very optimistic" to 6 "very pessimistic"
Source: McKinsey & Company COVID-19 Consumer Pulse, China n = 1,048 including Hubei province, South Korea n = 600, Japan n = 600, India n = 582, US n=1,119, Brazil n = 1,311, UK n = 1,000, Germany n = 1,002, France n = 1,003, Spain n = 1,003, Italy n = 1,005, Portugal n = 601; South Africa n = 535

growth in at-home media consumption, with live news and movies or shows topping the list. But the increase in time spent on media is not necessarily driving higher ROI for digital media spend; Google and Facebook are seeing changes, some negative, to their business already.

What marketing leaders can do

Marketing as we know it has changed. With retail shut down, sports at a standstill, and upfronts effectively cancelled, many of the channels companies have traditionally relied on are out of commission. Clearly, shopping channels will reopen eventually. But marketers need to adjust to a very different environment in the short term.

This will require putting in place dedicated crisis response teams who are focused on the most important revenue-related activities. Operating in agile ways—and remotely—they will need to focus on short-term business health priorities (eg, cash flow, "run-the-business" revenue targets) but at the

Exhibit 2

Decreased spending expectations continue across most categories.

Expected spend per category over the next 2 weeks compared to usual,[1] net intent[2]

■ Increase   ■ Stay the same   ■ Decrease   ◣ Net intent decline by >5 vs March 16/17

Category	Net intent	Category	Net intent
Groceries	+15	Entertainment at home	+6
Snacks	0	Books/magazines/newspaper	−19
Tobacco products	−14	Consumer electronics	−50
Take out/delivery	−13	Out of home entertainment	−72
Alcohol	−25	Petcare services	−49
Quick service restaurant	−45	Fitness & wellness	−57
Restaurant	−74	Personal care services	−63
Footwear	−58	Gasoline	−57
Apparel	−64	Vehicle purchases	−50
Jewelry	−68	Short-term home rentals	−61
Accessories	−64	Travel by car	−68
Non-food child products	−27	Cruises	−62
Household supplies	+2	Adventures & tours	−61
Personal care products	−15	International flights	−69
Skincare & makeup	-44	Hotel/resort stays	−79
Furnishing & appliances	-59	Domestic flights	−76

[1] 1Q: Over the next 2 weeks, do you expect that you will spend more, about the same, or less money on these categories than usual?
[2] Net intent is calculated by subtracting the % of respondents stating they expect to decrease time spent from the % of respondents stating to increase time spent.
Source: McKinsey & Company COVID-19 US Consumer Pulse 3/23–3/29/2020 n = 1,119 matched and weighted to US general population 18+ years based on American Community Survey 2016 of the US Census Bureau

same time put the business in a position to address longer-term realities and opportunities. Given the high degree of uncertainty for the foreseeable future, the success of these teams will depend on how effectively they can test, learn, and adapt.

A company's playbook will vary depending on its demand situation and sector. Consumer categories with high-demand products, such as cleaning materials or shelf- stable food, will need to act differently than big-ticket-item categories, where demand has dampened for now. Broadly, we

believe marketing leaders will need to act across three stages:

1. Resolve and resilience: manage the now
The playbook for reacting to the current crisis is anchored on four actions:

— *Support employees, customers, suppliers.* Given the scale of the humanitarian crisis we are facing, the number-one priority should be immediately changing ways of working to focus on employee wellness and health.

— *Empathize and understand customers.* Marketers need to get an immediate handle on customer motivations and behavior. While many companies believe they have a well-developed sense of their customers, circumstances are now so radically different that marketers should be questioning everything they previously believed to be true. It is crucial that this insight be understood not just by marketers but by the CEO, C-suite, board, and entire company. It will help them immediately recalibrate their messaging to address their customers' new reality and engage with them more thoughtfully and authentically.

— *Build up cash reserves.* While the full implications of the crisis are not yet clear, marketers should act decisively to manage costs and increase productivity. Marketers need to do an immediate revaluation of media performance to identify inefficiencies and optimize programs by channel, improve efficiency in how work is done, eliminate agency overlap, and get a clear picture of where the money is actually going.

— *Drive revenue response.* Consumer are spending less, making it critical for marketers to narrow their focus to a number of use cases and segments with the best demand-generation profiles. With clarity on targets, marketers can commit to a number do-now actions, including:

  • *Adjust mix to where the consumer is now.* Marketers will need to adopt an investor mindset[1] to aggressively adjust marketing spend and continually track performance in order to reallocate it quickly. With stores shut or shutting, a shift to online is inevitable, and companies will need to be both committed and creative about how to use digital channels. For example, on February 13, the mayor of Sanya,

a coastal town in southern China's Hainan province, appeared on Taobao Live to promote his city's mangoes. The video drew more than 25,000 views—and 30,000 kilograms of fruit sold out in less than two minutes.

Companies with stores that are open should work to enable customers—especially their most loyal—to shift to ecommerce delivery or BOPUS (buy online, pick up in store). Messaging that communicates how the business is trying to make shopping safer and more convenient. Incentives might include guided tutorials for those who aren't used to using such channels and temporary rewards for those who are using them even more.

• *Refocus your brand to connect with and be relevant to consumers.* Consumers are likely to remember brands whose behavior is particularly responsive to this crisis. Marketers should tap into the elements of their brands that are relevant to the current situation and can make a difference with their customer base and the world beyond. Holiday ads or overly optimistic messages, for example, may well come across as tone deaf right now. Lululemon, on the other hand, sent an email message saying, "The community carries on," and ways to tune in for at-home-yoga videos on their mobile app, through their Instagram ambassadors, and on Facebook.

Some companies have been truly inspiring—and inspired—in their response to the coronavirus crisis. Among many examples, Unilever has pledged more than $100 million in cleaning products for charities and almost $550 million in cash- flow relief for suppliers. Molson Coors has pledged $1 million to the

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[1] Kabir Ahuja, Biljana Cvetanovski, Jesko Perrey, and Liz Hilton Segel, "Building an engine for growth that funds itself," May 2018, McKinsey.com.

Bartender Emergency Assistance Program. By stepping forward to help society in general, they have not only done the right thing but have also raised awareness about their brands and created beneficial connections with current and potential customers.

- *Prioritize the most relevant product categories.* Marketers need to emphasize those that best fit online channels and are relevant to today's situation. That means taking resources from less relevant categories and quickly moving them to those where there is active or potential demand.

- *Go all-in on agile.* Agile marketing has established two-week sprints as the standard working speed, but that may be too slow for the world as it is now. Successful marketers, in these times, will be those who adjust their operations to deliver on-message campaigns in a matter of days, if not hours. Moreover, because so much of today's situation is unprecedented, rapid testing needs to be the norm so that companies can quickly learn what works and adjust in almost real time.

2. Return: Plan for the recovery

In a crisis, it's natural to focus only on near-term business results and adopt a pure survival strategy. But that could mean winning the battle but losing the war. We don't know what the recovery will look like or when it will come, but there will be a bottom to this crisis, and consumer demand will start to climb back up. Companies that thrived after past recessions,[2] we have learned, were those that kept communicating with consumers through the downturn, took a more active posture, focused on through-cycle interventions, and acted with urgency. Marketing leaders should consider how to re-architect their current marketing

models, approaches, and tools to get ready for the turnaround.

— *Rethinking strategies and media plans.* Since consumer behaviors and attitudes will continue to change, marketing strategies and media plans should follow suit. That means essentially starting from scratch on strategies and plans because marketers are facing such a divergent market dynamic that previous assumptions and accepted truths may no longer apply. That discipline is needed so marketing leaders can rethink their companies' value proposition to consumers, reassess which products and services can best deliver on that value proposition, and re-rchitect how they're delivered to each geography.

  This start-from-scratch mentality should carry over to developing media mixes to maximize the impact of marketing dollars. To help drive those decisions, marketers will need to develop new demand models since most current marketing models are based on historical data—promotions, assortment, growth maps, MROI, etc.—that will be less relevant in tomorrow's marketplace.

— *Winning the battle for brand awareness.* Our analysis of consumer decision-journey behaviors showed that 87 percent of consumers shopped around:[3] they were willing to consider other brands. We believe that behavior could be even more drastic given the scale and nature of this disruption. China again offers an indicator. Our latest McKinsey survey shows that about 33 percent of Chinese consumers have switched brands based on convenience and promotions— and 20 percent of that group intend to stick with the new brands they've tried. Marketers should begin revisiting what their brand means to

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[2] Martin Hirt, Kevin Laczkowski, and Mihir Mysore, "Bubbles pop, downturns stop," *McKinsey Quarterly*, May 2019, McKinsey.com.
[3] David Court, Dave Elzinga, Bo Finnerman, and Jesko Perrey, "The new battleground for marketing-led growth," *McKinsey Quarterly*, February 2017, McKinsey.com.

customers. Agile marketing practices—typically focused on performance marketing—will need to be adopted at the brand-building level, with communications managed rapidly in test, learn, and refine cycles of continuous improvement.

— *Redefining loyalty.* The program benefits, promotions, and other incentives that drove loyalty last year are unlikely to apply going forward. It will be important to get the input of your loyal consumers to understand what they expect to see from brands and companies, since what they value may have changed. Positive brand impressions driven by how companies handle their customers and themselves throughout the crisis. Creative acts of generosity to help the larger society and how they have treated their employees, as well as actions taken to support their customers, could have significant impact on loyalty given the severity of the pandemic. Continuing to invest in personalization techniques and technologies can help to drive more relevant interactions— offers, benefits, promotions—that can build loyalty with new customers and fortify it with existing ones.

3. Reimagination: Get ahead of the 'next normal'

When we finally reemerge from the COVID-19 crisis, we are likely to find ourselves in a "next normal" world. It is too early to tell what that will look like— what behaviors will stick, what attitudes will have shifted permanently, and what technologies will have firmly taken root in people's lives. For example: Will household inventory levels stay elevated? Will video conferencing permanently replace some interactions previously conducted in-person? Will digital ordering displace shopping previously conducted in-store? Beyond more obvious effects such as these, we are quite likely to see some changes in consumer psyche, and these are the

things that will truly define the next normal. How will attitudes change regarding healthcare, or carbon usage, or investments, or institutions, for example? Companies shouldn't wait for a completely clear picture of the future to emerge—and this is an area where marketing leaders can help the CEO and the business as a whole to start reimagining the future.

— *Develop deeper insight and seek foresight.* Going forward, it will be crucial for marketers to take a much broader view of their consumers. This means gaining insights from beyond their industries and beyond their shores. New attitudes and behaviors might first appear in China or Iran. New buying behaviors and habits might solidify in categories that have undergone the most significant change during the crisis. Beyond trend spotting, marketers can find foresight with well-designed research. Techniques like market structure or consumer decision-journey mapping can uncover newly emerging unmet needs, and when these are used in agile sprints, marketers can get insights in two to three weeks.

— *Start ideating now.* It's possible that entirely new businesses and business models will emerge from the crisis. Virtual-based revenue streams such as app-based services may have more promise, and new ecosystems and marketplaces are likely to appear. With uncertainty likely to be the norm for the foreseeable future, it will be important to develop a portfolio approach to launching initiatives, tracking, and reallocating resources based on how each performs. Marketers should act as a catalyst for action by bringing their insights and ideas to the rest of the organization to begin this discussion. This doesn't mean accepting long cycle times, however. One retail business was able to launch an entirely new e-commerce business in just

13 weeks. To support these new businesses and models, companies will need to consider which capabilities to develop, from AI to machine learning, as well as using cash reserves to acquire companies for talent and capabilities to accelerate their moves into new markets.

Traditionally, marketing has been the business function that best understands the customer. How well marketing leaders can continue to be relevant as their customers change will play a large role in determining how businesses will weather the COVID-19 crisis and meet the needs of tomorrow's consumers.

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Connecting with customers in times of crisis

During the COVID-19 pandemic, companies that lead with empathy and genuinely address customer needs can strengthen relationships.

by Fabricio Dore, Oliver Ehrlich, David Malfara, and Kelly Ungerman

The **COVID-19** global humanitarian and economic crisis has forced individuals and companies to rapidly change how they live and work. Many elements of business and life are being challenged; in some cases, the next normal may look very different as new ways of working are carried over into the future. Companies are doing their best to manage through this pandemic—from ensuring an effective crisis response,[1] to managing supply-chain disruptions,[2] to safeguarding the well-being of their employees by adjusting daily working practices.[3]

Customer experience takes on a new meaning against this backdrop. Executives are typically approaching customer experience by creating seamless, convenient and engaging customer journeys; however, the needs of customers at the moment have shifted dramatically towards more essential concerns. A recent McKinsey survey of US consumers found that 64 percent of respondents have felt depressed, anxious, or both over the past several weeks, and 39 percent stated that they would be unable to pay their bills after one month of unemployment.[4]

Leading organizations are reorienting their customer-experience efforts to meet their customers' primary needs, such as safety, security, and everyday convenience. These actions will inevitably speak louder than words in a world where companies are increasingly advertising a message of "we are here for you." By consciously providing empathy and care during this crisis, companies can build a foundation of goodwill and long-lasting emotional connections with the communities they serve.

Seven actions to demonstrate empathy for customers

Over the past few months, companies have had to quickly adjust to COVID-19. The first step for many organizations was to stabilize operations and safeguard their own employees. From this position, companies can then find genuine, creative ways to show empathy and emotionally connect with

their customers. Many have already begun to take seven actions related to individual safety, security and stability, convenience and ease of use, and emotional bonds and trust (exhibit).

1. Minimize risk in physical interactions with products and services

Society's first responsibility during a pandemic of this scale is eliminating opportunities to spread the virus, especially among the most at-risk populations. Companies have been minimizing the risk of contagion when fulfilling essential tasks, particularly when they involve vulnerable groups.

Grocery retailers have responded by taking extra precautions, such as extending opening hours for the elderly and healthcare workers as well as free home-delivery for customers more than 65 years old. Many are limiting the number of people who can be inside the store at once and putting physical-distance stickers on the floor to aid compliance. E-commerce and online food-delivery companies around the world are offering new contactless delivery options to eliminate direct physical contact between customers and delivery drivers. Companies offering services that require customers to be in close proximity, such as airlines, are taking measures to reduce risk and ensure the health and safety of both their customers and employees. Of course, this approach requires more stringent standards for cleaning as well as new work processes, such as suspending drink refills or recycling to avoid touching passenger-handled items.

2. Actively contribute to safety by innovating the product portfolio

Companies should ask themselves two critical questions: Do we have a product the world needs right now? Or can we rapidly adapt our product portfolio to provide goods that are urgently needed? In pursuing this approach, companies can use their strengths to provide essential products, even if those goods are outside of their current product offering. For example, some distilleries are using

[1] Mihir Mysore and Ophelia Usher, "Responding to coronavirus: The minimum viable nerve center," March 2020, McKinsey.com.
[2] Knut Alicke, Xavier Azcue, and Edward Barriball, "Supply-chain recovery in coronavirus times—plan for now and the future," March 2020, McKinsey.com.
[3] Raphael Bick, Michael Chang, Kevin Wei Wang, and Tianwen Yu, "A blueprint for remote working: Lessons from China," March 2020, McKinsey.com.
[4] The survey was conducted online between March 16 and 17, 2020 and included 979 US residents.

Companies can consider seven actions to emotionally connect with customers in times of crisis.
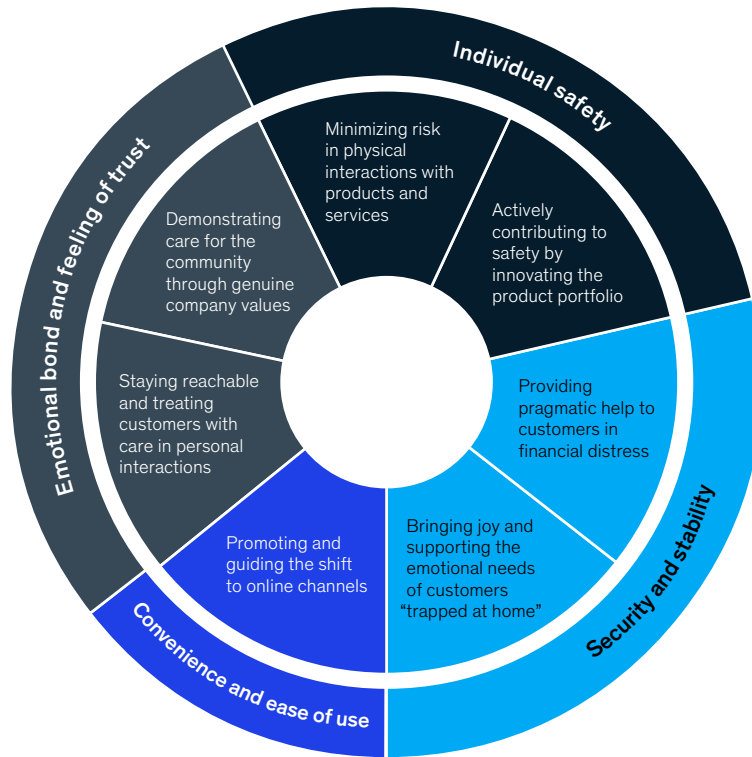
their ethanol supplies to provide materials for hand sanitizers through partnerships with refineries.

Companies are also stepping up to meet the demand for more medical equipment and personal protective equipment. Apparel manufacturers are responding to a drop in sales by producing thousands of urgently needed face masks instead. Some automotive companies are shifting production to manufacture ventilators, for example, General Motors is partnering with a US-based medical device company to produce respiratory care products.

Companies beyond manufacturing are still able to innovate their product portfolio to contribute to safety initiatives. Rideshare companies are looking to use their network of drivers to transport medicine and basic goods, rather than passengers. This effort could provide lifesaving drugs to individuals who are not able to go out to purchase them because of the quarantine or other conditions.

In all of these cases, company leaders have demonstrated their commitment to customers and society. At the same time, they are creating alternatives so they can continue providing meaningful work for their employees despite substantial demand reductions in their core business.

3. Provide pragmatic help to customers in financial distress

Once customers have secured their personal safety, their next concern is often financial. As companies are forced to decrease operations for an uncertain time period, individuals and millions of small business owners face massive income and liquidity issues.

Providing flexible solutions when dealing with financial challenges is now both a responsibility and a huge trust driver for companies. Financial institutions are not penalizing customers who cannot meet payment obligations for March. Telcos are not terminating service or enforcing late-

payment fees for customers experiencing hardship for an extra 60 days. And energy companies are not shutting off power for nonpayment; in some cases, they are even reconnecting customers whose service had been turned off prior to the crisis.

In addition, companies are seeking to alleviate unexpected sources of financial stress as events unfold. Travel companies, including most major airlines, are waiving cancellation fees. Families who formerly relied on school lunches to feed their children can benefit from efforts such as those introduced by Burger King, which provides two free kids meals to Americans who make any purchase through the Burger King app.

4. Bring joy and support the emotional needs of customers 'trapped at home'

Many people are forced to stay at home and experience all the concerns that come along with having to do so. Companies are acting to make homelife more enjoyable and to also ensure the well-being of their customers.

Families have to entertain their children at home for weeks to come, making access to online content a truly fundamental need. Telcos are providing free unlimited data for the next 60 days to all mobile customers with data plans. Entertainment companies have released content ahead of schedule: the Walt Disney Company, for example, released the family-friendly blockbuster *Frozen 2* on its streaming platform, Disney+, three months earlier than planned. New York's Metropolitan Opera offered free digital shows to entertain virtual audiences, while Google Arts & Culture has paired with museums around the world to curate virtual tours.

Other companies are checking in with their customers to help relieve stress. Meditation and mindfulness providers, such as the Headspace app, will be providing free subscriptions to healthcare professionals and unlocking free content for consumers. Multiple organizations have launched online services that include food delivery and recipes, shared rides, online courses, and traditional financial services.

Actively shift customers to online channels

With so many directives around the world to remain at home, companies that previously relied on physical operations have had to direct customers to online offerings.

As an example, since many gyms have been directed to close all physical facilities, they are now offering hundreds of free online home workout courses to all members. Companies offering virtual capabilities, as with Cisco's Webex, are assisting schools and universities as they transition to remote learning by offering free tools for teachers, parents, and students to support the development of online-learning plans. Italian banks are encouraging the use of digital channels while providing tutorials for online banking. Medical providers are providing care through digital services, such as telemedicine, with health insurers supporting the initiative by offering zero copays.

Companies without online services can find ways to establish and scale online offerings with substantial demand from customers as their needs increasingly turn digital. This shift to online and digital channels has the potential to dramatically increase online traffic post-recovery.

6. Stay reachable, and treat customers with empathy in personal interaction

With physical channels such as bank branches and nongrocery retail stores closed, many customers are turning to other channels for questions and requests that require personal attention and care.

Service companies in telcos and banking are currently experiencing increased inbound call volumes in their contact centers while at the same time having to shift their customer-service centers to remote-working arrangements. For example, a leading European telco equipped 10,000 call-center agents with laptops and tool infrastructure within a week, enabling them to take calls from their homes. Companies that provide customers with additional guidance and support can maintain communication and engagement. Other companies have enhanced options for seeking information digitally; Erdos

Group launched a WeChat program in China to offer virtual product consultations. Airlines facing traveler cancellations or trip changes are urging customers whose travel is not within 72 hours to address their needs through the company's website.

While most companies must address reachability, some companies, such as those in the medical industry, face callers who have significantly different types of questions than they did prior to the pandemic. Another key priority is proactively responding to this shift by training call-center agents to effectively manage these new questions. Cigna has established a 24/7 customer-resource center specifically to help customers with claims related to the novel coronavirus. Companies should reevaluate how to prepare their agents to address these emerging needs.[5]

7. Demonstrate care about the community through genuine company values

Companies can stay true to their vision while showing that they genuinely care about their customers. Actions taken during crises can help build trust and reinforce brand values (see sidebar, "Forming a purpose-driven bond with customers").

One of the most talked-about company initiatives in Germany came from McDonald's and ALDI. The two companies initiated a staff-sharing plan so that interested McDonald's workers from temporarily closed branches can redeploy at ALDI stores to ensure that the retailer can meet the currently increased customer demand. Supporting local communities while linking these efforts back to company values is exemplified by companies delivering free, fresh meals to medical workers in the cities they serve. Similarly, sustainable-footwear company Allbirds is giving free shoes to healthcare workers, and pharmacies and drugstores are also gearing up to donate space in their parking lots for medical testing.

The Alibaba Foundation has donated medical supplies to 14 countries in Asia and the United

Forming a purpose-driven bond with customers

Companies that show their commitment to the communities in which they operate could build a more loyal customer base in the long run. A 2019 McKinsey survey found that 64 percent of consumers choose to buy from brands they believe are doing social good— up from 13 percent in 2017. In another McKinsey study, 70 percent of respondents said they try to purchase products from companies they consider to be ethical. Gen Z, soon to become the largest consumer segment, is particularly socially minded. Some 65 percent of this segment strive to learn the origins of the products they consume. In addition, they are willing to hold organizations accountable if, for instance, a brand that touts diversity actually lacks diversity in its own ranks.

States and will also be publishing a digital handbook to share learnings from the COVID-19 experience in China. Tableau Software has developed a free data resource hub using case data compiled by leading educational and government research organizations to help stakeholders see and understand coronavirus data in near-real time. LinkedIn, through employee referrals, is providing free access to its premium features for a designated period of time to help employees at small businesses cope with the economic downturn.

Public service announcements and other on-brand communication can be used to send messages of unity: for example, Coca-Cola's marketing has been reminding customers that "staying apart is the best way to stay united."

All these efforts show a clear care for customers and an obligation to serve on the part of companies, bringing local or international communities together with new knowledge and resources. Every action taken by a company should reinforce what

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[5] Alok Kshirsagar, Tarek Mansour, Liz McNally, and Marc Metakis, "Adapting workplace learning in the time of coronavirus," March 2020, McKinsey.com.

customers already know—that companies care and are willing to invest in helping their community.

Forging lasting connections with customers

During times of crisis, leading companies are pivoting from marketing to helping and from fulfilling customer desires to meeting customer needs. Socially conscious organizations across sectors and geographies are finding ways to get involved and support their customers and communities.

The current COVID-19 outbreak is a global crisis and an opportunity for leaders to support their customers and communities. Leading in a caring, empathetic manner during these difficult times has the potential to create real connections that will outlive the social and economic impacts of the pandemic. And large companies should consider it a duty to serve the communities in which they do business.

Adapting customer experience in the time of coronavirus

Care, creative thinking, and new tools can address customers' acute needs today and forge stronger ties in the post-COVID-19 era.

by Rachel Diebner, Elizabeth Silliman, Kelly Ungerman, and Maxence Vancauwenberghe

In a short period of time, COVID-19 has overwhelmed lives and livelihoods around the globe. For vulnerable individuals and the customer teams that serve them, it has also forced a rethinking of what customer care means. Suddenly, examinations of customer journeys and satisfaction metrics to inform what customers want have given way to an acute urgency to address what they need.

Particularly in times of crisis, a customer's interaction with a company can trigger an immediate and lingering effect on his or her sense of trust and loyalty. As millions are furloughed and retreat into isolation, a primary barometer of their customer experience will be how the businesses they frequent and depend upon deliver experiences and service that meets their new needs with empathy, care and concern. Now is also the time for customer experience (CX) leaders to position themselves at the forefront of the longer-term shifts in consumer behavior that result from this crisis. Keeping a real-time pulse on changing customer preferences and rapidly innovating to redesign journeys that matter to a very different context will be key.

Hand in hand with this perspective, four CX practices can frame short-term responses, build resilience, and prepare customer-forward companies for success in the days after coronavirus. They are: focusing on care and connection; meeting customers where they are today; reimagining CX for a post-COVID-19 world; and building capabilities for a fast-changing environment (Exhibit 1).

1. Focus on fundamentals: Care and connection

Now more than ever, people need extra information, guidance, and support to navigate a novel set of challenges, from keeping their families safe to helping their kids learn when schools are shut down. They want a resource they can trust, that can make them feel safe when everything seems uncertain, and that offers support when so much seems to be overwhelming. A baseline starting point: staying true to company values and purpose. Our research shows that 64 percent of customers choose to buy from socially responsible brands, a figure that has grown significantly in the past two years.[1]

Exhibit 1

Four actions can address immediate customer needs and prepare for the future.

Focus on care and concern	Meet your customers where they are	Reimagine the post-COVID-19 world	Build agile capabilities for fluid times
• Reach out, but with support, not marketing	• Innovate digital models to help customers weather the crisis safely from home	• Economic hard times will force cost cuts	• Tap social media, not surveys, for quick customer readings
• Make a priority of employees and community	• Expand home delivery options	• Migrate customers to digital channels to save money and boost satisfaction	• Solicit employees for ear-to-the-ground insights
• Stay true to company purpose and values	• Consider contactless operations	• Brick and mortar stores may look very different post-crisis	• Save time with "test and scale" labs
			• Pay attention to "failure modes" indicating that you've missed customer signals

[1] *Earned brand 2019*, Edelman, edelman.com.

The way organizations step up to play this role for their customers, their employees, and the broader community is likely to leave lasting memories in customers' minds.

Care for your customers

The first step in caring is to reach out—not in marketing or overt attempts to gain a competitive edge, but to offer genuine support. Many organizations have already stepped up to care for their customers. For instance, Ford's "Built to Lend a Hand" campaign outlines initiatives including payment relief and credit support. Budweiser redeployed $5 million usually spent on sports and entertainment marketing to the American Red Cross. When tens of thousands of college students needed to vacate their dormitories unexpectedly, a storage rental company offered 30 days of free self-storage. A credit-card company quickly recognized the pandemic's financial burden and waived one month of interest on credit cards. Government officials have encouraged others to do the same. These experiences are critical for customers in the short term, and the impact will build positive relationships that are bound to last long after the crisis has ended.

Care for employees

In times of crisis, caring for customers starts with thinking first about employees. As any flight attendant would advise during the preflight safety briefing, it's important to put on your own oxygen mask before helping others. Our research shows that 60 percent of Americans are very or extremely concerned about their safety and the safety of their families, while 43 percent are very or extremely concerned about their job or income—and not being able to make ends meet.[2]

Some companies have led with employees in mind during an unsettling period of uncertainty. In a video prepared for employees, Marriott CEO Arne Sorenson transparently shared statistics on the company's performance and outlook, announced pay cuts for himself and his executive team, and focused

on a sense of hope in the future. Many companies have pledged to continue paying hourly workers at their regular rate, even if they need to remain at home due to illness, while others are still paying hourly workers despite store closures. For those still on the job, employers can provide new tools, training and support to enable employees to deliver superior customer experience in a new environment.

Care for the community

Today's industry leaders have demonstrated that genuine care should extend beyond the immediate customer base. Italian companies have donated hundreds of millions of dollars to local hospitals and the Civil Protection Agency to combat the virus spread. Many are stepping up to the plate to manufacture important supplies. Luxury-goods companies have refitted cosmetics and perfume production to help produce hand sanitizer. Remote conferencing services companies, who are benefiting from the shift to virtual meetings, have provided free videoconferencing for K–12 schools.

2. Meet your customers where they are today

Customers' normal patterns of life have come to a halt. Simple activities like a trip to the grocery store or dining out with friends are now difficult, risky, or even prohibited. Overnight, demand patterns have shifted. Overall online penetration in China increased by 15–20 percent.[3] In Italy, e-commerce sales for consumer products rose by 81 percent in a single week, creating significant supply-chain bottlenecks.[4] Customers need digital, at-home, and low-touch options. Digital-led experiences will continue to grow in popularity once the coronavirus is quelled, and companies that act quickly and innovate in their delivery model to help consumers navigate the pandemic safely and effectively will establish a strong advantage.

Accelerate digital options

Digital delivery has become a necessity for most customers who are confined at home. Adoption

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[2] McKinsey US Consumer Pulse survey of 1,073 US participants, 18 years old and above, between March 20 and 22, 2020.
[3] McKinsey survey of 1,249 participants across 46 cities in China, February 2020.
[4] Chiara Bertoletti, "Coronavirus Nuovi dati sulle vendite della gdo in store e online," GDOWeek, March 6, 2020, gdoweek.it.

The way organizations deal with their customers, their employees, and the broader community in a crisis is likely to leave lasting memories in customers' minds.

has grown strongly, even among the most "digitally resistant" customers. For some companies, the rapid development of digital functionalities is key to ensuring continuity of services. China-based Ping An Bank rolled out new "Do It At Home" functionality and received more than eight million page views and nearly 12 million transactions within half a month. Players in service industries have also accelerated digital value-added services like advice and education. Over 44,000 viewers tuned in to Bank of China's first three online shows, where leading investment managers shared market insights, discussed the impact of the virus, and gave advice.

Other companies are making select digital services free to help existing customers and broaden their reach to new audiences. Fitness companies are deploying this strategy through extended free trials for their online and app-based classes, where app downloads and new sign ups have grown between 80 percent and more than 250 percent in recent months. It's likely that many customers who have converted to digital services will stick to them after the immediate health crisis is over: Companies who make this shift to digital and deliver superior experiences have an opportunity to increase adoption and maintain these customer relationships after the crisis.

Bring your business to customers' homes
Similarly, home delivery has gone from a convenience to a necessity: during this crisis, Italy has seen online grocery home-delivery users double between February and March.[5] In China, Meituan, China's premier food delivery service, reported quadrupled delivery orders in early 2020. Quick-service restaurants and aggregator apps are offering free delivery to capture share in this demand shift. Some fresh meal delivery start-ups have experienced a month-on-month demand boost of 25 percent and are experimenting with bulk versions of their offering. In the United States, home delivery options have expanded beyond food, as pharmacies offer extended free trials on their prescription delivery service, and car dealerships offer to pick up and drop off vehicles repair and maintenance.

Make physical operations touch-free
If part of the customer journey must exist in a physical channel, consider converting to contactless operations. The United States has seen a 20 percent increase in preference for contactless operations, with numerous industries adapting to this change. Meituan, which started as a food- and product-delivery service but evolved into a digital ecosystem player, was the first Chinese company to introduce contactless delivery in Wuhan.[6] The service quickly became popular among all audiences, enabling Meituan to reach beyond its core millennial customer base—more than two thirds of new users are in their 40s and 50s. In the United States, Walgreens has rolled out a drive-through shopping experience. Customers order from a menu of available items such as household goods, medical supplies, and groceries.

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[5] Madeline Lenahan, "COVID-19: Impact on food and drink," Apptopia, March 12, 2020, appotopia.
[6] In contactless delivery, customers order online or via phone, and the delivery is dropped off at a pre-specified location to minimize interpersonal interaction.

Store associates assemble and check out the order—all from the convenience of the drive-through window. Grocery chains have kept their physical stores open to shoppers but are adding touchless measures, including new installations of plexiglass "sneeze guards" at every cash register to protect customers and employees.

3. Reimagine customer experience for a post-COVID-19 world

The COVID-19 crisis will end at some point. We expect changes in consumer preferences and business models to outlast the immediate crisis. This has begun to play out in China, where there has been a 55 percent increase in consumers intending to permanently shift to online grocery shopping, and an increase of three to six percentage points in overall e-commerce penetration in the aftermath of COVID-19.[7] Some consumers will be trying digital and remote experiences for the first time. In China, the share of consumers over the age of 45 using e-commerce increased by 27 percent from January to February 2020, according to Chinese market-research firm QuestMobile. Once they are acclimated to new digital or remote models, we expect some consumers to switch permanently or increase their usage, accelerating behavior shifts that were already underway before the crisis.

Further, once the public-health crisis has subsided, economic impacts will persist. Leading companies will deliver on the customer experiences that are emerging as most important in the "next normal," while finding ways to save and self-fund.

Find savings without sacrificing experience

In a downturn, cutting costs is inevitable. But that does not have to come at the expense of a good customer experience, which can create substantial value (Exhibit 2). Often, the best ways to improve experience and efficiency at the same time are to increase digital self-service and to make smarter operational trade-offs, grounded in what matters most to customers. In industries like banking, digital servicing and sales are less expensive than branch-

and phone-based approaches. The problem for many banks is that too few customers reach that point because they find digital channels unfamiliar and intimidating. Migrating customers to digital channels is often a successful way to boost savings and satisfaction. Teams can adopt this customer-centric mindset in any cost-cutting exercise, including migrating customers to self-serve channels, radically simplifying a product portfolio, or optimizing service level agreements.

Reimagine your brick-and-mortar strategy

So far, 60 US retailers—representing $370 billion in annual sales and over 50,000 physical retail locations—have closed temporarily.[8] The market capitalization of physical retail space has fallen by more than 35 percent.[9] When stores reopen, the world of brick and mortar may be fundamentally different. More and more customers will have grown comfortable with digital, remote, and low-touch options, even in rural and older populations.

We expect to see the shuttering of underperforming stores. Retailers and consumer goods companies should plan now to capture this lost volume. Use mobile, online and geospatial data to optimize networks and omnichannel sales. Examine dynamics across digital channels, owned outlet stores, and wholesale partners. Companies should also re-examine the role that physical locations will play. Omnichannel fulfillment options such as buy online, pickup in store will increase. Some locations may be converted to "dark stores" for fulfillment only.

Finally, some existing stores may shift toward experience hubs that offer services and encourage purchase across all channels. Consider Nike's store in New York's SoHo neighborhood. There customers, assisted by a personal coach, can try on shoes in various simulated sporting environments—including a basketball half-court, soccer trial field, and outdoor track—to determine their preferred product. As the forced isolation of coronavirus fades from view, this type of outlet may be a template that additional retailers will adopt.

[7] McKinsey survey of 1,249 participants across 46 cities in China, February 2020.
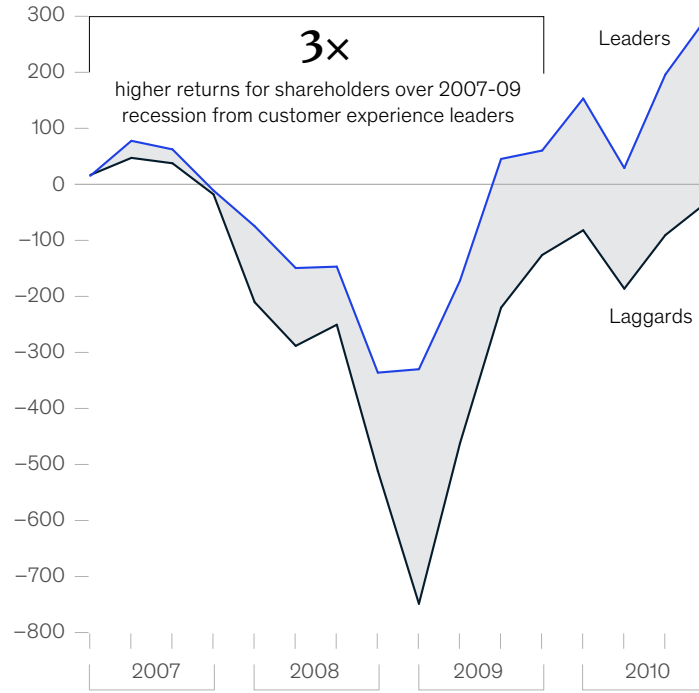[8] "Coronavirus and store closures: Tracking America's retailers and restaurants," *Wall Street Journal*, March 26, 2020, wsj.com.
[9] Google Finance, March 6, 2020, finance.google.com.

Exhibit 2

Focusing on customer experience is a winning strategy in recession.

Total returns to shareholders of customer experience leaders and laggards,[1] % by quarter

[1] Comparison of total returns to shareholders for publicly traded companies ranking in the top 10 or bottom 10 of Forrester's Customer Experience Performance Index in 2007–09.

Source: Forrester Customer Experience Performance Index (2007–09); press search

4. Build capabilities for a fast-changing environment

Maintaining a strong customer experience in crisis requires rapid research to understand changing dynamics and new pain points as well as agile innovation to address them. Customer leaders who master that approach will create value for consumers in high priority areas and in an environment of increased competition.

Keep a real-time pulse on changing customer preferences

Traditional customer insights techniques, such as surveys, often have an 18- to 24-day lag between launch and results readout. At a time when conditions can change from hour to hour, that can be far too long to deliver useful perspective. Companies should look to quick and novel ways to keep a pulse on consumer sentiment. In Italy alone, Facebook has seen a 40 to 50 percent increase in usage since the crisis began. A surge in online usage now underway offers opportunity to tap into insights from social media to rapidly understand consumer sentiment and develop new ideas. One Chinese rental car company established a team focused on monitoring social media to identify real-time trends. In Shenzhen, where employees were asked to avoid using public transit, it rolled out a "rent five days, get one free" offer that allowed people to expense a weekday carpool for work and keep the car on Saturdays to run personal errands safely.

Listen to employees

Frontline employees are a company's eyes and ears on the ground. Solicit and collect employee feedback: it will prove useful in gauging how customers are feeling and how daily interactions are changing. Sadly, this source of insights often goes largely overlooked—while 78 percent of frontline employees report that their leaders have made customer experience a top priority, nearly 60 percent say they believe that their ideas for improving that experience often go unheard.[10] Tools and technology now exist to rapidly collect and aggregate real-time ideas and feedback from frontline employees. Investing in these can make a critical difference in the rapidly changing current environment.

Adopt agile innovation

The sooner that companies can fulfill new consumer needs during this time, the better off both will be. This often means accelerating time to market for new customer experiences, rapidly prototyping and iterating, and releasing innovations in their "minimum viable" state, rather than waiting to perfect them. Building agility across functions to handle changing customer circumstances is necessary and will have long-lasting benefits. Typically, test-and-scale labs allow companies to build new experiences with 50 percent reduction in speed to market. In addition to agile approaches, companies should rapidly examine their innovation pipeline to set

priorities for new customer experiences that line up with remote, digital, or home delivery trends; these will likely continue to accelerate and differentiate CX providers in the post-COVID-19 world.

Finally, customer leaders shouldn't take their eyes off of "failure modes" that can hurt if overlooked. When it comes to demonstrating care toward employees, make sure to double down on supporting employees—customers will notice and appreciate this as well. Don't assume that customers will automatically migrate to existing digital and remote platforms. Rather, actively raise awareness and the internal capabilities needed to support adoption of these experiences. As for securing useful feedback, if the volume of customer insights and feedback from sources like social media and employees has not increased severalfold in an intense crisis environment, take it as a sign that you are missing critical insight needed to adapt experience.

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Customer experience has taken on a new definition and dimension in the overwhelming challenge of COVID-19. Customer leaders who care and innovate during this crisis and anticipate how customers will change their habits will build stronger relationships that will endure well beyond the crisis's passing.

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[10] "Finding the way to happy customers through the voice of your employees," Medallia, medallia.com. Note: McKinsey & Company is a partner with Medallia in conducting research, compiling data, and developing customer analytics.

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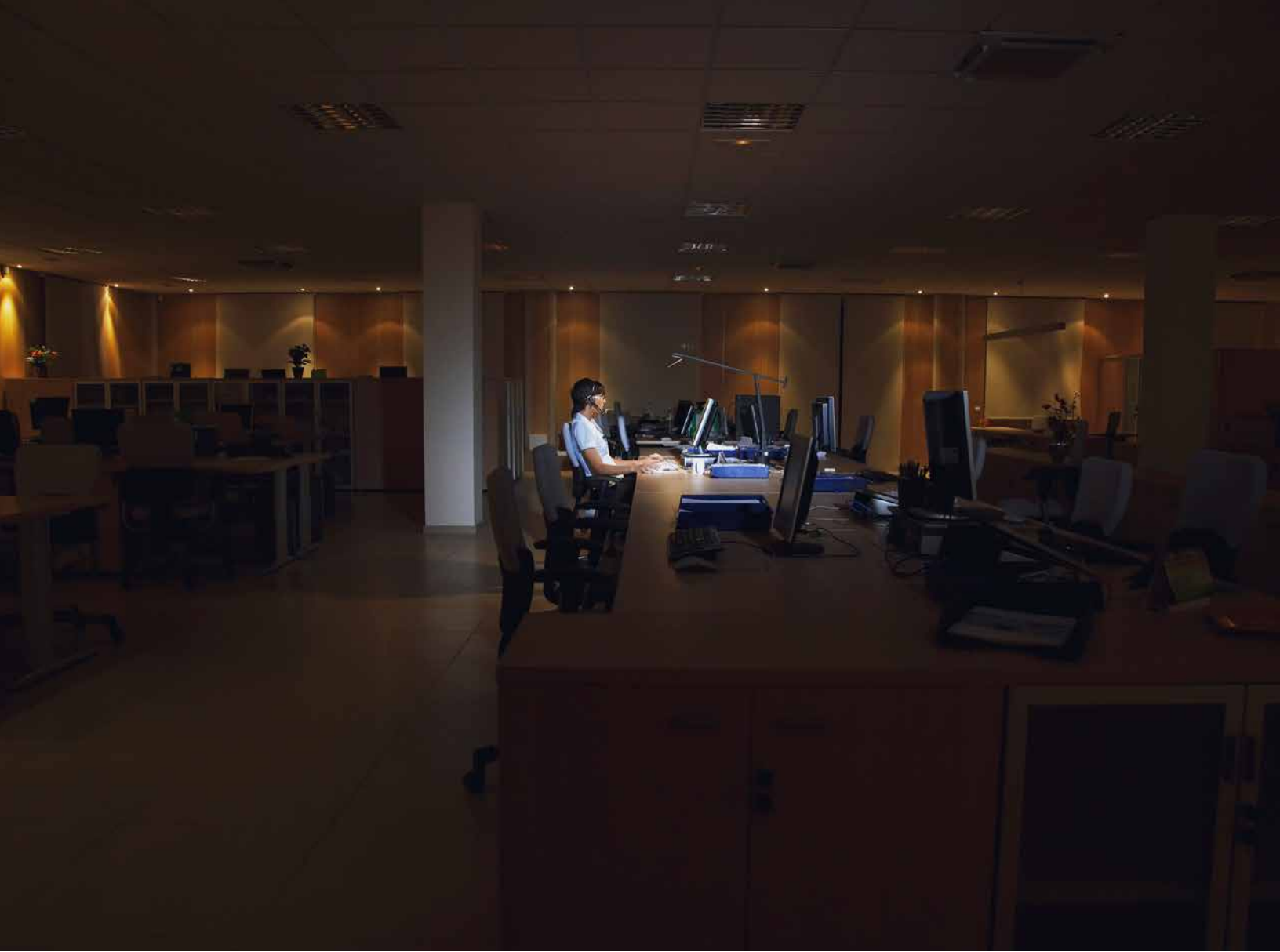
Customer-care organizations: Moving from crisis management to recovery

The COVID-19 pandemic calls for a focus on six imperatives to rapidly adapt to this new environment.

by Jeff Berg, Eric Buesing, Vinay Gupta, and Raelyn Jacobson

As the COVID-19 pandemic spreads around the world, companies across all sectors scrambled to stabilize operations and institute new guidelines to protect the health of their employees while maintaining service to their customers. Contact centers moved with unprecedented speed: within days, some companies had shifted thousands of workers to remote locations or enabled them to work from home. Others quickly experimented with staggered shifts. Through it all, contact centers sought to maintain connections with customers at a time when engagement was crucial.

Now, customer-care organizations are shifting their focus to meet the rapidly evolving needs of their employees and customers. At the top of the list is creating resilient, coordinated business-continuity plans to reflect the new reality. In the past, business-continuity plans tended to focus on technology resiliency, but in our new world, plans will need to prioritize operational resiliency—such as flexible working models, geographic redundancy at the city rather than country level, and virtualization of key processes, security protocols, and policies.

By focusing on building new capabilities and flexibility, companies can emerge from the pandemic with increased productivity and resilience.

Six imperatives for customer-care organizations during a crisis

Our ongoing discussions with customer-care organizations have uncovered a variety of actions that have proved particularly effective in responding to the crisis. We have grouped those actions into six imperatives that span strategy, operations, technology, and culture. Many of these imperatives will be familiar to customer-care organizations; some might already be priorities, while others are more aspirational. However, the pandemic has elevated all of them to a position of critical importance in the near term.

Continue to shape customer expectations
As the crisis has unfolded, customer-care organizations have revisited and implemented practices and policies that help customers feel safe and cared for in times of need. Many companies

sent out thoughtful, personal messages from leadership in the days and weeks after the onset of the pandemic. Maintaining this engagement in the channels where customers are looking for information is critical to sustaining the relationship and addressing the most common top-of-mind issues. In banking, for example, customers may be looking for reassurance that they will have continued access to their money so they can pay their bills. They will also need a clear understanding of financial protections and the options for making emergency payments.

Proactive communication can reduce customer contact volumes by resolving common triggers for contact before they arise. In parallel, agents must be kept updated on trends that might affect the landscape for customers. Customers may be on edge because of the disruption and uncertainty around their own situation, so companies are training agents to be more empathetic in their interactions with customers by using strategies such as in-the-moment coaching. In addition, when service representatives are unable to perform basic transactions because of systems outages or heavy call volumes, they need to provide an explanation, acknowledge the inconvenience, and refer customers to the proper self-service channels.

Reinforce culture and connection with employees
During the next several months, workers will be juggling a host of personal and professional issues. Customer-care leaders are devoting extra time to understanding what agents are going through and providing additional flexibility and support. For example, they might offer later starts or earlier ends to shifts, longer breaks, or more virtual coaching sessions. To replace traditional management techniques that relied on workers being in the same space, customer-care leaders are implementing virtual meeting tools and communication channels. When an employee gets sick, managers should not only demonstrate genuine empathy but also make sure that the worker is aware of available support. For the workforce in general, leaders must communicate the measures they are taking to protect employees, such as additional sanitizing and paid sick leave.

Organizations with strong cultures often sustain those environments through in-person activities such as putting up posters, team events, and visits from senior management. Supervisors will need to translate all processes, tools, and support from brick-and-mortar locations to a remote environment to ensure that agents experience the same immersion in the organization's culture. To build community and maintain a cohesive workplace, organizations can create new avenues for social connectivity throughout the day. Methods such as virtual team huddles and meetings, team events, and intra- and interteam competitions offer a much-needed break from solitary work while boosting camaraderie. Organizations can also double down on building and maintaining community through remote competitions (such as quizzes and contests) and other engagement activities.

Establish and maintain a COVID-19 control room
As part of the initial response to the COVID-19 outbreak, many companies created crisis nerve centers—agile, coordinated bodies that bring together staff members with crucial organizational skills and capabilities. The nerve center monitors developments related to the COVID-19 pandemic, supports decision making, and coordinates the rapid response. Since the pandemic will continue to directly affect contact centers, companies should consider creating a control room within their customer-care organizations. This entity would address the impact of the crisis on the contact center and report up to the company's central nerve center.

The customer-care control room should be guided by a cross-functional team including members from both front- and back-office functions. To facilitate clear decision making, two to three contact-center leaders should be designated as decision makers.

The control room's role can evolve as the situation changes in the months ahead. Daily developments often have a direct impact on customer demands and incoming calls, so the control room can track these trends to inform scenario modeling and capacity planning. And in the event of recurring waves of COVID-19 or other disruptive events, the control room can quickly scale to meet the challenge.

Scale an effective remote-working model
The days of a fully on-site or local workforce may be over. In response, many companies are preparing for a workforce made up of both remote and on-site employees. The maturity of a customer-care organization's remote-working initiative will shape its priorities in the near term. Companies with the appropriate capabilities could focus on scaling quickly by ensuring that agents have the necessary tools and resources to handle calls from home while maintaining customer data confidentiality. Organizations should communicate clear policies and expectations to all employees during the expansion effort.

Many organizations without remote-working capabilities have started to test infrastructure by introducing remote working for a percentage of in-house agents, such as those who handle non-voice channels. One IT help desk, for example, spent three days experimenting with remote work for 300 employees. Each day, about 20 percent of those 300 employees worked from home and reported back on the issues they faced, such as bad internet connectivity or disruptive children or pets. Once a remote-working capability is up and running, companies can then focus on optimizing norms across technology, security, and management to increase productivity and ensure employee engagement.

Many companies are preparing for a workforce made up of both remote and on-site employees.

Still, organizations will need to reassess many processes, such as onboarding for new employees. To keep new agents engaged, managers can break down training sessions into modules and incorporate interactive elements such as multiple surveys or quizzes. Some organizations are also reporting more frequently on applicable key performance indicators and using advanced analytics to improve quality control.

Aggressively expand the adoption of digital self-service approaches

The COVID-19 pandemic has increased not only overall customer volumes but also the number of new customers using digital channels. For example, online orders for food and other items are up 15 to 20 percent in some affected countries, leading to an increase in customer-service requests.

Companies have deployed a range of responses in an attempt to distribute demand. Some companies, particularly in the airline and consumer goods industries, have been advising customers of long wait times, offering callback options and optimal call times, and steering them to available digital channels.[1] Customers have responded by shifting to self-service options that may have seemed too complicated in the past. In parallel, companies can quickly expand peer-to-peer community forums and rely on them to manage customer inquiries. Gig-economy workers and brand ambassadors on social media could be enlisted to create forums and online videos detailing how to complete basic self-service transactions.

Companies can also take a range of actions to manage the influx of recent digital adopters, including helping them adjust to digital service channels. For example, a company might create a series of new landing pages about its COVID-19 response along with clear FAQs on creating an online account and conducting self-service transactions.

When customer volumes spike in response to updated policies or developments on COVID-19, customer-care organizations can quickly tweak digital self-service offerings to accommodate new requests. Companies could identify a critical set of transactions, such as fraudulent charges or emergencies, that customer-service representatives will continue to perform. One international bank, for example, informed customers through its interactive voice response (IVR) system that its contact centers could not accommodate certain types of nonemergency calls. Organizations might also consider reallocating resources and upskilling their workforces to support high-volume digital channels such as chat and email.

Ramp up workforce flexibility

Companies can take several actions to deal with spikes in demand and disruptions. To manage customer inquiries during the COVID-19 crisis, companies have adjusted shift structures—implementing everything from staggered shifts to a recalibrated mix of part- and full-time workers to direct hiring of additional work-at-home agents. As some physical locations have had to close, newly available service workers—such as knowledgeable branch tellers or store employees—can step into contact channels, particularly phone. These new agents can be brought up to speed quickly with e-training on simple call topics and non-voice channels. During downtime, customer-care organizations can create additional flexibility by upskilling employees on new queue or channel skills.

Customer-care organizations could also consider spreading their workforce across multiple sites, using empty offices or meeting spaces to support physical distancing. Countries that are home to large business processing outsourcing (BPO) companies are experiencing disruption and often lack the infrastructure to enable agents to work from home. Companies can work with their BPO partners to quickly ramp up their remote work capabilities—for example, by searching in low-infrastructure areas for suitable alternative workplaces, such as offshore captive centers, bank branches, hotels, and business centers. Even with these efforts, BPO companies may struggle to operate at full capacity, potentially creating long wait times for their clients' customers. Companies can prioritize certain categories of requests to help BPOs run at near their service-level agreements.

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[1] Sarah Krouse and Sharon Terlep, "Customer calls to companies rise amid coronavirus, but operators aren't standing by," *Wall Street Journal,* March 29, 2020, wsj.com.

Leaders will embrace new ways of working

This fast-moving pandemic is forcing companies to adapt their operation strategies and problem-solving approaches to a new reality. Customer-care organizations that follow these six imperatives will be well on their way to increased resilience and flexibility. However, the most successful organizations will also embrace the following three approaches.

Enhanced business-continuity planning. The business solutions that help companies manage this pandemic may not be effective in other situations, such as natural disasters. In addition, companies should be prepared for scenarios including recurring or seasonal outbreaks of COVID-19 even after the pandemic abates. Business-continuity planning must become more frequent and more rigorous in response to the new normal. Customer behavior may continue to shift to digital channels, leading to increased e-commerce traffic and self-service even after stores reopen. The types of incoming calls will continue to change: while volumes may decrease, complexity will likely remain high as customers resolve simple issues on their own even as new types of requests arise. Strategies to enable remote work and increase flexibility should take technology and talent into account and incorporate resilient location plans.

Rapid iteration and experimentation. The leap in digital adoption across customer demographics and the sense of urgency around customer needs provide an opportunity to experiment. Instead of aiming for perfection, companies should implement a true test-and-learn mentality that enables them to develop and deploy changes quickly. Every organization is reaching out proactively in response to the pandemic, and customer tolerance for this communication has increased. Now is the time to ensure that channels of communication remain open. Companies should keep customers informed about ongoing efforts to improve support through remote services. This open dialogue can also enable customers to provide valuable feedback.

Targeted investments. Investments made during this crisis will have lasting impact. Customer preference for digital channels and quick response times was on the rise even before COVID-19, and this trend will likely accelerate when the situation settles. Leaders will invest in people, processes, and technology that facilitate better agent support, self-service, employee engagement, and automation of simple tasks. Enhanced technology solutions need to be flexible enough to support future innovations. For example, companies could consider investing in dynamic technologies that are easy to deploy, such as web forms, chatbots, and IVR updates. Larger initiatives, including telephony replatforming and complex process automation, may be deprioritized in the near term. But as long as investments allow for flexibility, they should help set the stage for future innovations and the rapid development of infrastructure within the organization.

Customer-care organizations should also explore investments in data and analytics to support a range of applications. The COVID-19 crisis has demonstrated the difficulty of predicting call volumes during disruptions. With a better understanding of changing patterns in call types, companies could accelerate the reskilling of employees to quickly adapt to emerging customer needs. Analytics could also give managers insights into the productivity and service quality of a remote workforce by using speech or text analytics. Finally, companies could use data on customer behaviors to build a segmentation strategy for repeat callers, especially in centers experiencing significant increases in call volume.

If the six imperatives outlined here have become the new table stakes in customer care, the next-level strategy calls for organizations to manage business continuity, embrace experimentation, and make targeted investments. Organizations will need to adopt all of these tactics to build resilience in the contact center and manage the new reality.

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Accelerating digital initiatives

The digital-led recovery from COVID-19: Five questions for CEOs

A digital future lies ahead. By acting early and being bold and decisive, CEOs can accelerate their digital transformation and reach the next normal sooner.

by Matt Fitzpatrick, Isha Gill, Ari Libarikian, Kate Smaje, and Rodney Zemmel

There's a popular meme going around that neatly captures the tipping point of digital. It's a short questionnaire asking who is driving your digital transformation. The first two options are "CEO" and "chief digital officer." Below that, highlighted with a bright red circle, is "COVID-19."

The coronavirus pandemic is a humanitarian crisis that continues to take a tragic toll on people's lives. There's no denying it is also acting as a catalyst for change—economic, societal, personal, and corporate—on a scale not seen since wartime. The scale of the change and the speed at which it's happening is shining a bright light on the fact that companies are facing a once-in-a-generation shift. And for all the uncertainty about what the future will look like, it's clear already that it will be digital.

The challenging economic outlook and continued uncertainty are forcing CEOs to contemplate some difficult choices. Some are pulling in, making cuts, and focusing on riding out the storm. Others,

however, are taking decisive action to make sure that when the crisis ends, they'll be stronger than they are today.

Research and experience show that those acting with a through-cycle mindset will be best positioned to accelerate out of the downturn. In the recessions of 2007–08, the top quintile of companies was ahead of their peers by about 20 percentage points as they moved into the recovery in terms of cumulative total returns to shareholders (TRS). Eight years later, their lead had grown to more than 150 percentage points.[1] One key lesson from that experience is the companies that move early and decisively in a crisis do best.

Accelerating your digital transformation

We believe the COVID-19 crisis is likely to significantly accelerate the shift to digital and fundamentally shake up the business landscape. Even before COVID-19 hit, 92 percent of companies

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[1] Martin Hirt, Kevin Laczkowski, and Mihir Mysore, "Bubbles pop, downturns stop," *McKinsey Quarterly*, May 2019, McKinsey.com.

Core principles

As CEOs consider how to move ahead, certain mindsets and capabilities matter more than others. They were important before COVID-19 hit but are particularly crucial today:

— *Flexibility and speed.* The speed at which the change hit us caught everyone off guard. It's become obvious that entrenched systems that have supported businesses for years—tech stacks, reporting lines, processes—have been no match for the dynamic fluidity of the current crisis. Building in redundancies, modularized systems for quick switch-outs, and devolved decision making (based on clear guidelines) will need to be the norm.

— *Bold actions backed by a solid understanding of risk.* The scale of the crisis needs to be matched by boldness in response. Incremental change and half measures are unlikely to provide businesses with the economic horsepower needed to ride out the storm and come out of the crisis in a strong position. Boldness of action should be tempered with a full appreciation of risk, from the impact of cyberattacks to the loss of crucial talent.

— *Commitment to a holistic approach.* The crisis has highlighted systemic and organizational weaknesses. These flaws highlight the need to ensure that digital initiatives take into account the complete range of dependencies and build in cross- functional mechanisms that integrate systems, people, and processes across the business.

thought their business models would need to change given digitization.[2] The companies listed on the S&P 500 Index have an average age of 22 years, down from 61 years in 1958.[3]

Despite herculean efforts and significant accomplishments at many businesses, the pandemic has brought into sharp relief how vulnerable companies really are. One consumer-packaged-goods (CPG) company saw its online orders go through the roof, only to have its operations descend into chaos in an effort to process and fulfill the surge. Tech-enabled businesses, on the other hand, were able to move at speed, such as India food-tech business Zomato, which used its platform to work with grocery start-ups to meet surging online-order demand.[4]

For many companies, the only option is to accelerate their digital transformation. That means moving from active experimentation to active scale-up supported by ongoing testing and continuous improvement. These moves should happen across two dimensions: at the core of the company and through the development of new businesses. Top-performing digital companies take this twin approach.[5]

Despite the immense challenges CEOs are managing today, now is the time to act. In fact, we've seen that the reduction in time spent traveling has given CEOs and their top teams more time to focus on new initiatives. One leader at a large bank, for instance, said recently that it was finally getting around to launching an important customer-relationship-management (CRM) program that it had no time for before. Given how fast change is happening, waiting until you see signs of recovery will be too late.

There is much we don't know. But drawing on our experience and lessons learned from companies that are moving ahead—particularly in China—we believe that CEOs should ask the following questions to help prepare their businesses for the recovery when it finally comes.

1. Do you have a clear view of where the value is going to be and a road map that will get you there?

Despite noteworthy successes in adjusting to COVID-19, many leaders have been frustrated by how slowly necessary changes have moved, from serving a surge of customers migrating to digital channels to scaling back-end operations. We believe that one of the biggest reasons for these difficulties is that, while companies have had many digital pilots and initiatives in place, they didn't add up to a coherent and integrated digital engine to drive the business forward.

Accelerating their digital transformation requires CEOs to take a step back and reassess their road maps (the coordinated and detailed plans for what needs to be done, by whom and when, from the leadership level down to the front line) as well as the assumptions about value and feasibility underlying them. Those assumptions need to be based on emerging new customer behaviors, supplier dynamics, and regulation. Our consumer-sentiment analysis, for example, has revealed whole new consumer groups trying out digital products and services for the first time. As of this writing, in the United States, some 35 percent of Gen Zers, for example, have used video chat for the first time (versus just 6 percent for boomers), while 54 percent of households with incomes greater than $100,000 have tried online streaming for the first time (versus 35 percent of those households earning less than $50,000).[6]

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[2] Jacques Bughin, Tanguy Catlin, Martin Hirt, and Paul Willmott, "Why digital strategies fail," *McKinsey Quarterly*, January 2018, McKinsey.com.
[3] Matt Banholzer, Markus Berger-de Leon, Ralf Dreischmeier, Ari Libarikian, and Erik Roth, "Building new businesses: How incumbents use their advantages to accelerate growth," December 2019, McKinsey.com.
[4] Pramugdha Mamgain, "India's Zomato sees business opportunity in grocery amid COVID-19 crisis," *Deal Street Asia*, March 23, 2020, dealstreetasia.com.
[5] "How digital reinventors are pulling away from the pack," October 2017, McKinsey.com.
[6] "Survey: US consumer sentiment during the coronavirus crisis," April 2020, McKinsey.com.

On the B2B side, our recent customer-behavior research shows that digital interaction with B2B customers is now two times more important than traditional channels—more than a 30 percent jump since before the COVID-19 crisis hit.[7] In telemedicine, regulation, licensing, and reimbursement questions that had traditionally hampered its adoption have been swept away to help fight the coronavirus, laying open a scenario of reduced—or, at least, different—regulation in the next normal. These developments have to be closely monitored, of course. Some behaviors are likely to stick—early research suggests that more than 55 percent of Chinese consumers are likely to permanently buy more groceries online, for example[8]—while others won't.

Having a road map doesn't mean, of course, that it will be executed. Among the most important tasks in operationalizing the road map is getting alignment with the leadership team—the chief digital officer (CDO) as well as key line and functional leaders—and putting in place the resources needed to deliver on it. Alignment is challenging in normal times but is now that much more difficult with your leadership team all working from home. Through video chat or phone, the CEO needs to be explicit in calling out members of the top team so that everyone understands not only what the road map is but also what their responsibilities are and how they will be resourced.

CEOs should then work with their top team to identify critical roles (roughly 30 to 40 for an enterprise). For these roles, it's important to spell out the job and eliminate tasks that are not essential, and then provide solid teams, enough budget, and clear (usually enhanced) decision rights. Selection is critical—you need absolutely the best talent in these roles.

2. What role should business building have in helping you accelerate your entrance into new markets or access new customers?
Many businesses can only match the pace of both the crisis and the change in customer behavior by building something outside of the core company. This allows them to build something in a modern way—fully agile with microservice architecture and entrepreneurial talent.

The issue, however, is that fewer than 10 percent of business builds succeed. When enterprises take a more structured approach—including a clear strategy, entrepreneurial talent, and the proper balance between corporate support and operational freedom—the success rate jumps to 67 percent. Corporate support is particularly important now. Besides access to cash and relative stability, large enterprises provide a "safe harbor" during the crisis, allowing the entrepreneurial spirit to thrive free from the broader economic concerns. Our recent B2B survey indicates that large B2B companies remain more stable, with approximately 50 percent planning to increase or maintain their spending in the short and long term.[9]

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[7] McKinsey B2B Decision Maker Pulse Survey.
[8] Julien Boudet, Jonathan Gordon, Brian Gregg, Jesko Perrey, and Kelsey Robinson, "How marketing leaders can both manage the coronavirus crisis and plan for the future," April 2020, McKinsey.com.
[9] McKinsey B2B Decision Maker Pulse Survey.

Executive checklist

o Do you have a business-led technology road map that reflects new assumptions about your industry and the pace of digital adoption by your customers, suppliers, employees, and regulators?

o Does your resourcing—including where your very best talent is deployed—match your digital aspirations?

o Does your road map reflect the "last-mile behavior changes" that will be necessary to make your transformation program stick?

We have already seen and, frankly, been deeply inspired by, what is possible during this current coronavirus crisis. In China, engineers built two hospitals (2,600 beds in total) from scratch in just over a week. In select catchment areas, the National Health Service (NHS) in the United Kingdom was able to execute long- term telehealth plans in 15 days or fewer. What this demonstrates to us—as in the proverbial "necessity being the mother of invention"—is that people can move with astonishing speed to build something new. One European retailer was able to launch a new e-commerce business in just 13 weeks. Overturning assumptions about the way organizations and consumers operate, we see a number of early archetypes for postcrisis business builders. Remote-service providers, for example, can take advantage of the big shift to online access by delivering services and providing support. Data visionaries are finding ways through analytics and automation to use new types and sources of data to generate value.

CEOs will have a key role in making sure that the enterprise develops a business-building capability rather than simply launching a new business. That's because it will be necessary to launch multiple businesses over time to sustain new sources of growth and as a hedge against future uncertainties.

3.How can you lock in the benefits of a more agile operating model to increase the metabolic rate of your business?
Once an almost exclusive domain of IT, agile has now permeated almost every part of the business. Companies are being forced to move and take action at unprecedented speed—and almost exclusively remotely. A large bank, for example was

faced with a 20-fold rise in origination volumes as part of a loan program to support small businesses. It "stood up" a cross-functional executive team to tackle the issue, from customer communication to underwriting to product development and training for 500-plus employees. The bank did this via twice-daily agile huddles, rapid backlog management, and issue resolution, all in a fully virtual setting.

The nature of the crisis has required teams to act quickly amidst uncertainty, make decisions with limited oversight, and react to fast-changing situations. There are typically 50 people that make 80 percent of the decisions, but, as the crisis has shown, moving to agile allows you to take advantage of thousands of brains.

Some new ways of working are an "all hands on deck" response to the pandemic that are not likely to be sustainable. But as CEOs look to accelerate the metabolic rate of their business in preparation for the recovery, they will need to be deliberate in protecting what has worked well and guard against the legacy ways of working creeping back when the crisis abates. Centralization can be good for managing a crisis, but it should not be mistaken for a model for growth, and CEOs will need to keep any overly centralized action from being the status quo. Protecting the benefits of new ways of working also doesn't mean just cutting costs on travel. It's about harnessing the vitality and effectiveness of extended agile teams working on objectives, not simply tasks.

For one thing, we suspect that executives are realizing something that we ourselves are also

Executive checklist

o How are you balancing the advantages the large enterprise can provide with the freedom that the new business needs to thrive?

o How will the management team measure success—including incorporating the high volumes of customer feedback—of the new business at the three-, six-, and 12-month mark from launch?

o What external partnerships are you exploring to build and scale the new business?

seeing: videoconferencing can be much more productive, especially for quick check-ins. While in-person meetings will be needed—previous research has shown that productivity among teams drops as the number of locations they

work from increases—some hybrid models will likely emerge to take advantage of the benefits of remote and in-person connection. Video meetings have exposed what agile gurus have been saying for years: that the ideal effective team size is five to nine people. A 20-person Zoom meeting, where you can see only nine people on an iPad screen, has shown itself to often be an exercise in frustration. Many CEOs should be able to see how much a skeleton crew can get done when given the right tools, support, and mission.

Other benefits are emerging as well, ones that CEOs need to make sure stick. For one, it will be crucial to preserve the empowered and iterative ways of working. Another is that clarity of purpose and a tight focus on just a few things can do wonders for animating an organization and driving results.

The necessity to figure out things on the fly has underscored another crucial capability: being able to learn and adapt. Even before the crisis, we found that the top 10 percent of companies in terms of revenue growth are more than 50 percent more effective than peers in testing, measuring, and executing based on what they've learned. Building up this corporate muscle isn't about improving training (although that is important, more on that later); it's about embedding a culture of experimentation, learning, and iterating.

The words of Beth Galetti, the senior vice president of HR at Amazon, are instructive: "We are frequently doing things that have never been done before. For this reason, there is often no playbook to teach nor experts to follow, so we empower people to try new things and learn along the way."[10]

The CEO can start building support for agile now by calling attention to the ways in which work has improved as well as by identifying processes and incentives that can hardwire the benefits.

4. How should you rethink your talent strategy so that you have the people you need when the recovery starts?

As the full economic impact of the crisis hits, pressure will continue to build to cut costs. CEOs will be faced with difficult people decisions. However, given the importance of talent in accelerating progress, it's critical to adopt a through-cycle mindset on people—not just in keeping the right talent but also in building the skills of the people you already have. For CEOs, this means developing a talent road map that's as detailed as a technology one.

CEOs at several large businesses are acting on this through-cycle mentality by articulating what critical skill pools are needed for recovery. In the technology realm, for example, the focus should be on building your base of top engineers, who are ten times more productive than less accomplished developers. These are the people who will be rapidly deployed and redeployed to do the most important work. This exercise includes determining how many of them will be needed so that there is sufficient

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[10] "How Amazon is built to try and learn," February 2020, McKinsey.com.

Executive checklist

o Are your business leaders, technologists, and control functions working together to continuously deliver incremental improvements (every two weeks) grounded in customer value?

o What does "test and learn" look like week to week for each of your strategic initiatives, so that you can capture learning from failure and build on it?

o Have you identified which elements of your current way of working you want to preserve and created a plan for doing so?

resiliency, developing an approach to building their skills, and identifying both the people who have emerged as stars during the crisis and those whose skills can be upgraded through training.

Training itself is likely to see profound change. Before COVID-19 hit, most companies struggled to get online learning to work. The new world of remote working, however, is acclimatizing people to the tools and processes that are core to distance education. This represents an opportunity for training to scale the programs built for how people actually learn best: shorter, "bite size" learning modules tailored to the individual and delivered when they're needed as part of a thoughtful learning journey. CEOs should prioritize remote boot camps, self-serve modules, simulations, and collaborative learning environments supplemented by a rigorous certification program and in-field trials to accelerate how teams learn.

5. What investments are the most necessary to create the technology environment that will allow your company to thrive in the next normal?

The disruptions of the coronavirus have underscored the crucial role of technology, from supporting remote working to scaling digital channels for surging customers. Despite the outstanding accomplishments in managing the technology response to the crisis, the many setbacks have highlighted systemic weaknesses. That shouldn't be a huge surprise, since of the organizations that have pursued digitization, 79 percent are still in the early stages of their technology transformation.[11] More important,

they've highlighted a point that's been made before but can no longer be ignored: technology is a core driver of value, not merely a support function.

This insight is crucial because too often the overriding factor when it comes to technology has been cost. CEOs have a leading role to play now in expanding that definition to include value creation as well as flexibility, cybersecurity, and resiliency. To make that happen, CEOs will need to work much more directly with their chief information officers (CIOs) or chief technology officers (CTOs) to make tech investments in legacy-system modernization and in microservice-architecture development, or in building a new tech stack altogether (for instance, for developing a new business). To enable this kind of effective decision making, some CEOs have added CIOs to the leadership team and have asked them to report directly. Having

CIOs closely involved with shaping the business strategy and agenda is shown to enable faster progress in achieving a company's digital goals.[12]

That focus on value extends to data and advanced analytics as well. Never before has the need for accurate and timely data been greater. The government of South Korea proved that point when it worked with private companies to launch a COVID-19 data platform that reduced contact-tracing time from 24 hours in early February to less than ten minutes on March 26. To do so, they developed a digital surveillance system that consolidates information from 27 public and private organizations.[13] This example highlights the

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[11] "Can IT rise to the digital challenge?," October 2018, McKinsey.com.
[12] Ibid.
[13] Park Han-na, "Seoul to launch 10-minute contact-tracing program, *The Korea Herald*, March 26, 2020, koreaherald.com.

Executive checklist

o Can you articulate why a recent engineering graduate would join you rather than a digital competitor?

o Do you have a skill road map that is as detailed as your tech road map?

o How are you tracking value at the individual level, and linking the learning to talent and performance management?

Executive checklist

o Is your digital transformation powered by modern software-development methods and delivery capabilities like a tech company?

o Do you have robust and federated data governance to enable broad and continuous use of data by the front line and to enrich the data over time?

o Are you investing at least as much to build conviction and the ability to act as you are in technology?

importance of tapping new data sources going forward. Additional initiatives could include developing 360-degree views of the customer, adopting consistent tool sets and processes, or modernizing data architecture and moving to the cloud. To get the full value from data in the future, it will be important to retrain algorithms based on new realities. At the same time, CEOs will need to work with their risk leaders to ensure that the scramble to harness data follows strict privacy rules and cyber best practice.

Increased digitalization has also highlighted the increasing importance of ecosystems.

Responding to customer needs during the crisis, for example, we've seen how some

banks integrated medical-care advice, doctor-appointment services, and automotive services for their customers. As protocols and standards increasingly normalize these connections, the CEO will need to help guide which ecosystems can drive the greatest value for the business and how to navigate the implications for customer relationships, data sharing, and intellectual property—key sources of advantage in the digital age.

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We have not seen the end of the crisis. Nor do we know exactly when the recovery will come. But it will come, and the CEOs who can best prepare their businesses effectively for a more digital future will give their companies the best chance for a brighter future.

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Digital strategy in a time of crisis

Now is the time for bold learning at scale.

by Simon Blackburn, Laura LaBerge, Clayton O'Toole, and Jeremy Schneider

If the pace of the pre-coronavirus world was already fast, the luxury of time now seems to have disappeared completely. Businesses that once mapped digital strategy in one- to three-year phases must now scale their initiatives in a matter of days or weeks.

In one European survey, about 70 percent of executives from Austria, Germany, and Switzerland said the pandemic is likely to accelerate the pace of their digital transformation. The quickening is evident already across sectors and geographies. Consider how Asian banks have swiftly migrated physical channels online. How healthcare providers have moved rapidly into telehealth, insurers into self-service claims assessment, and retailers into contactless shopping and delivery.

The COVID-19 crisis seemingly provides a sudden glimpse into a future world, one in which digital has become central to every interaction, forcing both organizations and individuals further up the adoption curve almost overnight. A world in which digital channels become the primary (and, in some cases, sole) customer-engagement model, and automated processes become a primary driver of productivity—and the basis of flexible, transparent, and stable supply chains. A world in which agile ways of working are a prerequisite to meeting seemingly daily changes to customer behavior.

If a silver lining can be found, it might be in the falling barriers to improvisation and experimentation that have emerged among customers, markets, regulators, and organizations. In this unique moment, companies can learn and progress more quickly than ever before. The ways they learn from and adjust to today's crisis will deeply influence their performance in tomorrow's changed world, providing the opportunity to retain greater agility as well as closer ties with customers, employees, and

suppliers. Those that are successfully able to make gains "stick" will likely be more successful during recovery and beyond.

Now is the time to reassess digital initiatives— those that provide near-term help to employees, customers, and the broad set of stakeholders to which businesses are increasingly responsible and those that position you for a postcrisis world. In this world, some things will snap back to previous form, while others will be forever changed. Playing it safe now, understandable as it might feel to do so, is often the worst option.
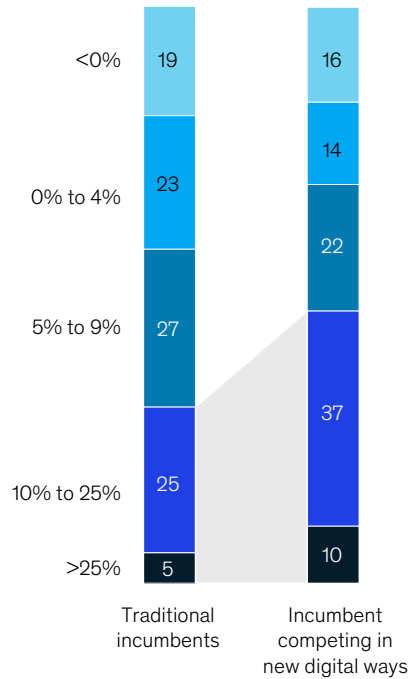
A crisis demands boldness and learning

Every company knows how to pilot new digital initiatives in "normal" times, but very few do so at the scale and speed suddenly required by the COVID-19 crisis. That's because in normal times, the customer and market penalties for widespread "test and learn" can seem too high, and the organizational obstacles too steep. Shareholders of public companies demand immediate returns. Finance departments keep tight hold of the funds needed to move new initiatives forward quickly. Customers are often slow to adjust to new ways of doing things, with traditional adoption curves reflecting this inherent inertia. And organizational culture, with its deeply grooved silos, hinders agility and collaboration. As a result, companies often experiment at a pace that fails to match the rate of change around them, slowing their ability to learn fast enough to keep up. Additionally, they rarely embrace the bold action needed to move quickly from piloting initiatives to scaling the successful ones, even though McKinsey research shows bold moves to adopt digital technologies early and at scale, combined with a heavy allocation of resources against digital initiatives and M&A, correlate highly with value creation (Exhibit 1).
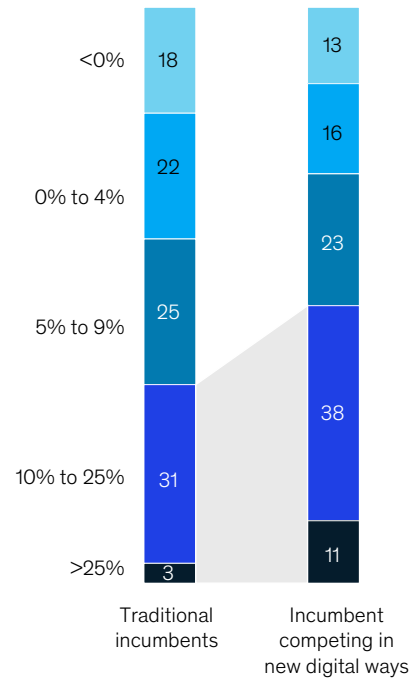
Exhibit 1

Bold, tightly integrated digital strategies are the most effective approach to digital transformations.

Rate of organic revenue growth,
% share of (past 3-year CAGR,[1] actual)

	Traditional incumbents	Incumbent competing in new digital ways
<0%	19	16
0% to 4%	23	14
5% to 9%	27	22
10% to 25%	25	37
>25%	5	10

Rate of EBIT[2] growth,
% share of (past 3-year CAGR, actual)

	Traditional incumbents	Incumbent competing in new digital ways
<0%	18	13
0% to 4%	22	16
5% to 9%	25	23
10% to 25%	31	38
>25%	3	11

Note: Numbers may not sum to 100, because of rounding.
[1] Compund annual growth rate.
[2] Earnings before interest and taxes.
Source: 2017 Digital Strategy Survey

As the COVID-19 crisis forces your customers, employees, and supply chains into digital channels and new ways of working, now is the time to ask yourself: What are the bold digital actions we've hesitated to pursue in the past, even as we've known they would eventually be required? Strange as it may seem, right now, in a moment of crisis, is precisely the time to boldly advance your digital agenda.

A mandate to be bold

What does it mean to act boldly? We suggest four areas of focus, each of which goes beyond applying "digital lipstick" and toward innovating entirely new digital offerings, deploying design thinking and technologies like artificial intelligence (AI) at scale

across your business, and doing all of this "at pace" through acquisitions (Exhibit 2).

New offerings

By now you've likely built the minimally viable nerve center you need to coordinate your crisis response. This nerve center provides a natural gathering point for crucial strategic information, helping you stay close to the quickly evolving needs of core customer segments, and the ways in which competitors and markets are moving to meet them. Mapping these changes helps address immediate risks, to be sure, but it also affords looking forward in time at bigger issues and opportunities—those that could drive significant disruption as the crisis continues. Just as digital platforms have disrupted value pools and

value chains in the past, the COVID-19 crisis will set similar "ecosystem"-level changes in motion, not just changes in economics but new ways of serving customers and working with suppliers across traditional industry boundaries.
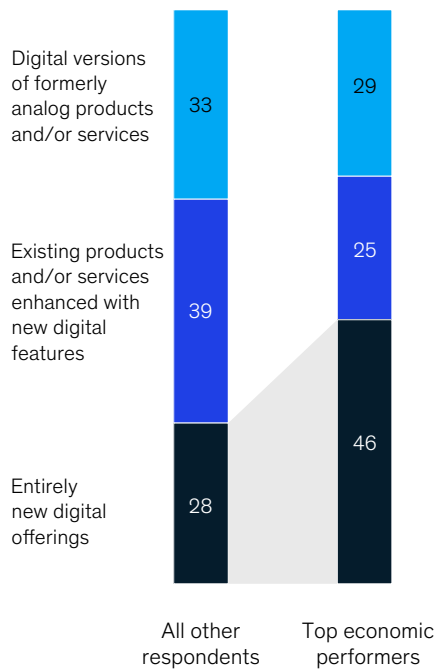
In the immediate term, for example, most organizations are looking for virtual replacements for their previously physical offerings, or at least new ways of making them accessible with minimal physical contact. The new offerings that result can often involve new partnerships or the need to access new platforms and digital marketplaces in which your company has yet to participate. As you

engage with new partners and platforms, look for opportunities to move beyond your organization's comfort zones, while getting visibility into the places you can confidently invest valuable time, people, and funds to their best effect. Design thinking, which involves using systemic reasoning and intuition to address complex problems and explore ideal future states, will be crucial. A design-centric approach focuses first and foremost on end users or customers. But it also helps make real-time sense of how suppliers, channel partners, and competitors are responding to the crisis, and how the ecosystem that includes them all is evolving for the next normal emerging after the immediate crisis fades.
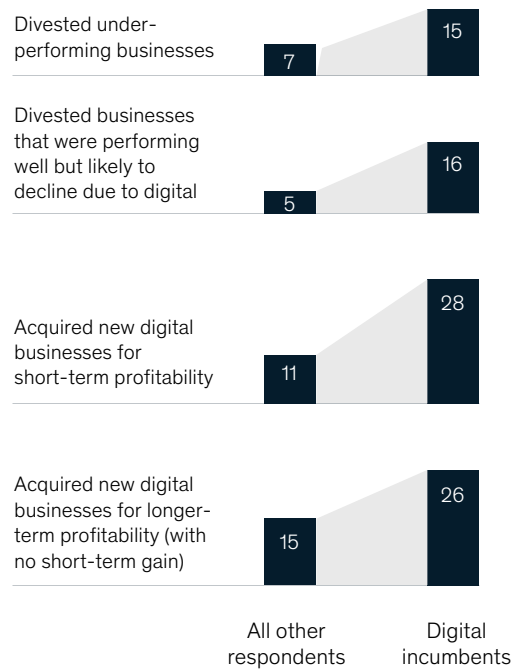
Exhibit 2

Organizations that are able to leverage things like design thinking into their new offerings during the crisis will see significant first-mover advantage.

Organizations' digital offerings,
% share, by degree of newness

Digital versions of formerly analog products and/or services — All other respondents: 33, Top economic performers: 29

Existing products and/or services enhanced with new digital features — All other respondents: 39, Top economic performers: 25

Entirely new digital offerings — All other respondents: 28, Top economic performers: 46

All other respondents | Top economic performers

Business portfolio makeup,
% of respondents

Divested under-performing businesses — All other respondents: 7, Digital incumbents: 15

Divested businesses that were performing well but likely to decline due to digital — All other respondents: 5, Digital incumbents: 16

Acquired new digital businesses for short-term profitability — All other respondents: 11, Digital incumbents: 28

Acquired new digital businesses for longer-term profitability (with no short-term gain) — All other respondents: 15, Digital incumbents: 26

All other respondents | Digital incumbents

Technology adoption being used at scale,[1] by business type, % of respondents

Design thinking

Digital incumbents: 44

Traditional incumbents: 21

Artificial-intelligence tools[2]

Digital incumbents: 22

Traditional incumbents: 11
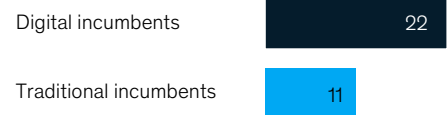
[1] For example virtual assistants, computer vision, voice recognition.
[2] At scale in 1 business unit or function, or organization-wide.
Source: 2017 Digital Strategy Survey

Organizations that make minor changes to the edges of their business model nearly always fall short of their goals. Tinkering leads to returns on investment below the cost of capital.

Reinvent your business model at its core

Going beyond comfort zones requires taking an end-to-end view of your business and operating models. Even though your resources are necessarily limited, the experience of leading companies suggests that focusing on areas that touch more of the core of your business will give you the best chance of success, in both the near and the longer term, than will making minor improvements to noncore areas. Organizations that make minor changes to the edges of their business model nearly always fall short of their goals. Tinkering leads to returns on investment below the cost of capital and to changes (and learning) that are too small to match the external pace of disruption. In particular, organizations rapidly adopting AI tools and algorithms, as well as design thinking, and using those to redefine their business at scale have been outperforming their peers. This will be increasingly true as companies deal with large amounts of data in a rapidly evolving landscape and look to make rapid, accurate course corrections compared with their peers.

While the outcomes will vary significantly by industry, a few common themes are emerging across sectors that suggest "next normal" changes to cost structures and operating models going forward.

— *Supply-chain transparency and flexibility.* Near-daily news stories relate how retailers around the globe are experiencing stock-outs during the crisis, such as toilet-paper shortages in the United States. It's also clear that retailers with full supply-chain transparency prior to the crisis—as well as algorithms to detect purchase-pattern changes—have done a better job navigating during the crisis. Other sectors, many of which are experiencing their own supply-chain difficulties during the crisis, can learn from their retail counterparts to build the transparency and flexibility needed to avoid (or at least mitigate) supply-chain disruption in the future.

— *Data security.* Security has also been in the news, whether it's the security of people themselves or that of goods and data. Zoom managed to successfully navigate the rapid scaling of its usage volume, but it also ran into security gaps that needed immediate address. Many organizations are experiencing similar, painful lessons during this time of crisis.

— *Remote workforces and automation.* Another common theme emerging is the widely held desire to build on the flexibility and diversity brought through remote working. Learning how to maintain productivity—even as we return to office buildings after the lockdown ends, and even as companies continue to automate activities—will be critical to capturing the most value from this real-world experiment that is occurring. In retail, for example, there has been widespread use of in-store robots to take over more transactional tasks like checking inventory in store aisles and remote order fulfillment. These investments won't be undone postcrisis, and those that have done so will find themselves in advantaged cost structure during the recovery.

Boldly evolve your business portfolio

No company can accelerate the delivery of all its strategic imperatives without looking to mergers and acquisitions (M&A) to speed them along. This is particularly true with digital strategy, where M&A can help companies gain talent and build capabilities, even as it offers access to new products, services, and solutions, and to new market and customer segments.

More broadly, we know from research into economic downturns that companies that invest when valuations are low outperform those that do not. These companies divested underperforming businesses 10 percent faster than their peers early on in a crisis (or sometimes in anticipation of a crisis) and then shifted gears into M&A at the first sign of recovery.

In more normal times, one of the main challenges companies face in their digital transformations is the need to acquire digital talent and capabilities through acquisitions of tech companies that are typically valued at multiples that capital markets might view as dilutive to the acquirer. The current downturn could remove this critical roadblock, especially with companies temporarily free from the tyranny of quarterly earnings expectations. Because valuations are down, the crisis and its immediate aftermath may prove an opportune time to pick up assets that were previously out of reach. We are already seeing many private-equity firms actively looking to deploy large swaths of capital.

Learning at the pace of crisis

Moving boldly doesn't mean moving thoughtlessly, however. Bold action and the ability to learn are highly interrelated. The real-time ability to learn during a crisis is in fact the one ingredient that can turbocharge your ability to scale quickly.

Find a new cadence

In situations of extreme uncertainty, leadership teams need to learn quickly what is and is not working and why. This requires identifying and learning about unknown elements as quickly as they appear. Prior to the crisis, leading companies had already been increasing the cadence of their learning as part of a quickened organizational metabolism (Exhibit 3). Companies can look to their example as they work to adapt to change more rapidly during crisis times—and beyond.

Four areas of intervention can help companies learn more quickly during the crisis and the next normal that follows.

Quicken your data reviews

Start by evaluating the frequency with which you review the available data. You should be reviewing multiple sources of data on a weekly (or more frequent) basis to evaluate the shifting needs of your customers and business partners—as well as your own performance. Look to your crisis nerve center as a single source of truth for newly emerging data about your employees, your customers, your channel partners, your supply chains, and the ecosystems in which your company participates. Then turn to secure file-sharing technologies like Box and Zoom to remotely share and discuss insights from this faster pace of data review.

Focus on technology

The abrupt shift to virtual operations and interactions, both inside and outside your organization, also provides an opportunity to accelerate your pace of
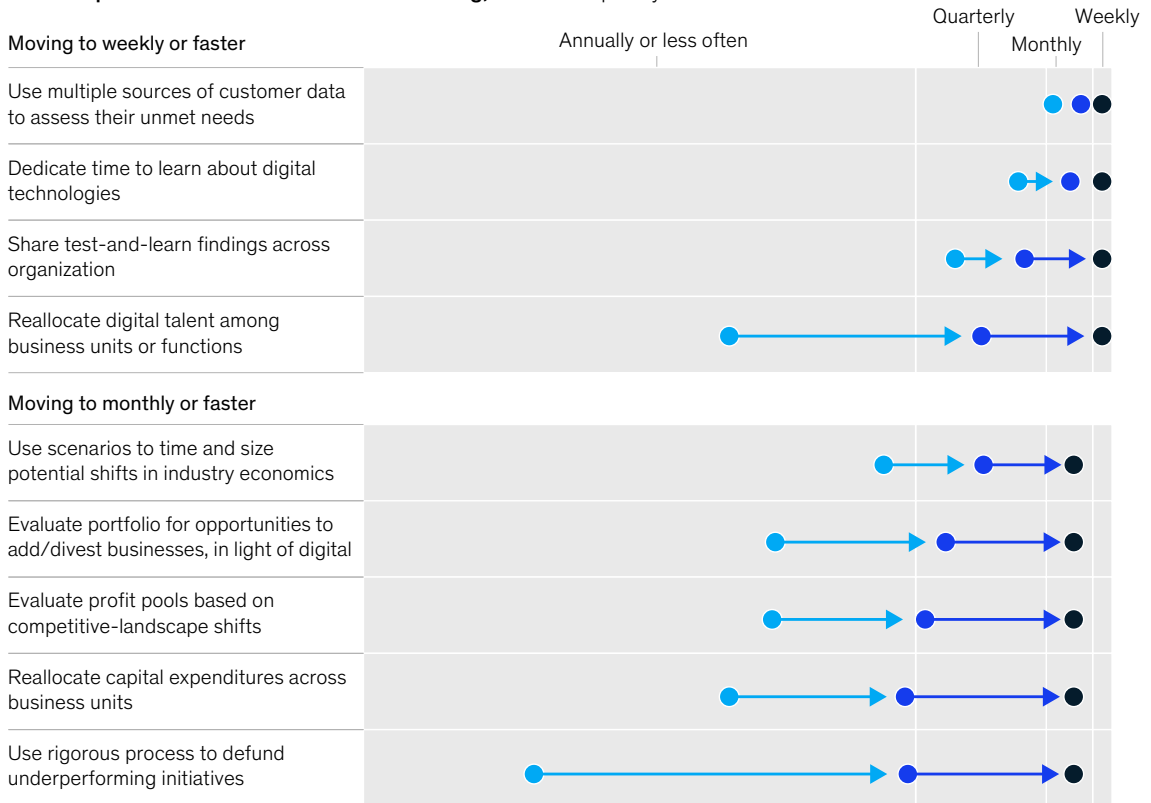
Because valuations are down, the crisis and its immediate aftermath may prove an opportune time to pick up assets that were previously out of reach.

Exhibit 3

The COVID-19 crisis is causing a need for acceleration beyond what we had seen before, going from three tiers of speed down to two.

● Respondents at top economic performers[1]   ● All other respondents[2]   ● New COVID-19 requirements

The new pace that the COVID-19 crisis is driving, median frequency[3]

	Annually or less often	Quarterly	Monthly	Weekly

Moving to weekly or faster
- Use multiple sources of customer data to assess their unmet needs
- Dedicate time to learn about digital technologies
- Share test-and-learn findings across organization
- Reallocate digital talent among business units or functions

Moving to monthly or faster
- Use scenarios to time and size potential shifts in industry economics
- Evaluate portfolio for opportunities to add/divest businesses, in light of digital
- Evaluate profit pools based on competitive-landscape shifts
- Reallocate capital expenditures across business units
- Use rigorous process to defund underperforming initiatives

[1] Respondents who say their organizations have a top-decile rate of organic revenue growth (ie, of 25% or more in past 3 years), relative to other respondents; n = 138.
[2] n = 1,304.
[3] Frequencies shown are the median values from a histogram, which was constructed by assigning "weekly" responses a value of 1, "monthly" responses 2, "quarterly" responses 3, "annually" responses 4, "every few years" 5, and "never" 6. The question also asked about the frequency of evaluating M&A opportunities as part of strategy-setting discussions. These responses are not shown, because M&A typically requires a longer time frame than the other 10 operational practices tested, often due to regulatory reasons.

learning about, and adoption of, technologies with which your organization might have only begun to experiment. As experimentation scales, so does learning. The rapid shift to digital can also reveal potential trouble spots with your organization's current technology stack, giving you a sneak preview of how well your technology "endowment" is likely to perform going forward. Here are some factors to keep an eye on as you more quickly learn about and adopt new technologies:

— *Data security.* Are you experiencing breaches as you move to remote working and data sharing?

— *Scalability.* Where are the breaks and crashes happening as 100 percent of your interactions with customers, employees, and business partners go virtual?

— *Usability.* Right now customers and business partners often have little choice but to access your products or services through your new digital offerings. Their options will expand as we move beyond the crisis. How well will your new offerings stand up? If your current usability is low, experiment to improve it now, while you still have a captive audience to partner with and learn from.

Test and learn

In normal times, experimentation might sometimes seem a risky game. Changing the working models to which employees, customers, or business partners are accustomed can seem to risk pushing them away, even when those experiments take aim at longer-term gains for all concerned. The COVID-19 crisis, however, has made experimentation both a necessity and an expectation.

Start with the customer-facing initiatives that, while more complex, offer a larger upside. Use automation and predictive analytics to quickly and effectively isolate difficulties. Look for opportunities to standardize what you're learning to support scaling digital solutions across core business processes. Standardization can help accelerate projects by reducing confusion and creating common tools that broad groups of people can use.

Learning while scaling

As companies increase their rate of metabolic learning, they need to quickly translate what they're learning into at-scale responses. Scaling what you learn is always an obstacle in a digital transformation. We've had plenty to say regarding scaling up analytics, scaling up quality, or innovating at speed and scale. Here we'll simply highlight the role learning plays in your ability to scale your digital initiatives.

While companies frequently pilot new digital initiatives with the intention of learning from them before they roll out broadly, these experiments and pilots, in normal times, only test one dimension at a time, like the conversion/engagement/satisfaction rates of individual customers, the unit economics of a single transaction, or the user experience of a given digital solution. Whether they want to or not, companies in crisis mode find themselves in a different type of pilot: one of digital programs at massive scale. The rapid transition to full scale in many types of digital operations and interfaces has brought with it many challenges (for example, building and delivering laptops in under two weeks to all employees to enable 100 percent of them for remote working versus the

10 percent that were previously remote). But it also brings opportunities. At the broadest level, these include the prospect for real-time learning about where value is going in your markets and industry, the chance to learn and feed back quickly what's working in your operations and your agile organizational approach, and the opportunity to learn where it is you're more or less able to move quickly—which can help inform where you might need to buy a business rather than build one.

Observing interaction effects

Since scaling quickly requires changing multiple parts of a business model or customer journey simultaneously, now is a valuable time to observe the interaction effects among multiple variables.[1] For example, healthcare providers are facing an increased demand for services (including mental health and other non-COVID-19 presentations) at the same time that their traditional channels are restricted, all in the context of strict privacy laws. This has caused many providers to rapidly test and adopt telehealth protocols that were often nonexistent in many medical offices before, and to navigate privacy compliance as well as patient receptivity to engaging in these new channels. Providers are learning which types of conditions and patient segments they can treat remotely, at the same time that they're widely deploying new apps (such as Yale Medicine's MyChart) to accelerate the digital medical treatment of their patients.

Similarly, when a retailer rolls out, within a week, a new app for country-wide, same-day delivery, it's testing far more than one variability at a time, such as the customer take-up of that new channel. Because of the scale, it can learn about differences in adoption and profitability by region and store format. It can test whether its technology partners can scale across 1,000 stores. It can test whether its supplier base can adapt distribution to handle the new model. Shifting multiple variables simultaneously, however, also increases the degree of difficulty when it comes to interpreting the results—because you're no longer isolating one variable at a time. Companies who

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[1] Interaction effects occur when two or more independent variables interact with at least one dependent variable. The effect of all the interactions together is often either substantially greater (or lesser) than the sum of the parts.

While companies frequently pilot new digital initiatives, these pilots only test one dimension at a time. Companies in crisis mode find themselves in a different type of pilot: one of digital programs at massive scale.

have already invested in AI capabilities will find themselves significantly advantaged. Making further investments now—even if you've yet to get going—with continue to pay out postcrisis as well.

Simplify and focus

Given the degree of complexity created by scaled experimentation, organizations need to find ways to simplify and focus to avoid being overwhelmed. Some of that is done for them as the crisis closes many physical channels of distribution and makes others impossible to access. But further streamlining is required along the lines of what is working, what isn't, and why. This is perhaps the first global crisis in which companies are in the position to collect and evaluate real-time data about their customers and what they are doing (or trying to do) during this time of forced virtualization. Pruning activities and offerings that are no longer viable while aggressively fixing issues that arise with your offerings will help increase the chance of keeping a higher share of customers in your lower-cost, digital channels once the crisis passes

Don't go it alone

Research indicates that people and organizations learn more quickly as a result of network effects. The more people or organizations that you add to a common solution space, in other words, the more quickly learning occurs—and the faster performance

improves. Some argue that these network effects occur in a so-called collaboration curve.

At a time of crisis, changing needs drive rapid shifts in employee mindsets and behaviors that play out as a greater willingness to try new things. Consider how you can best support the ways your talented employees learn. One option is to build or tap into platform-based talent markets that help organizations reallocate their labor resources quickly when priorities and directions shift—and help talented employees increase their rate of learning. Be sure to look not just within the boundaries of your own company but across enterprises to include your channel partners, your vendors, and your suppliers. Chances are they will be more willing than ever to collaborate and share data and learnings to better ensure everyone's collective survival.

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It's often the case in human affairs that the greatest lessons emerge from the most devastating times of crises. We believe that companies that can simultaneously attend to and rise above the critical and day-to-day demands of their crisis response can gain unique insights to both inform their response and help ensure that their digital future is more robust coming out of COVID-19 than it was coming in.

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Innovating from necessity: The business-building imperative in the current crisis

The coronavirus crisis is a world-changing event. Here are early solutions and concrete steps leaders can consider as they plan and build new businesses for the next normal.

by Jason Bello, Shaun Collins, Ralf Dreischmeier, and Ari Libarikian

The rapid, global spread of COVID-19 has unleashed what is possibly the biggest shock to our lives and livelihoods in nearly a century. While COVID-19 is above all a humanitarian crisis, businesses have also suffered as economies skid to a near halt.[1] But already, there are signs of creative business building, as companies respond to the crisis with innovative solutions born of necessity. They are throwing out the old assumptions that govern how they do business, as they rethink how to interact with customers and employees, are required to build more resilient supply chains, and reexamine attitudes toward privacy and data sharing.

That ability to envision new ways of operating will be crucial to weathering the crisis. Those that succeed will set the tone for the next normal that will follow[2] and define the subsequent generation of paradigms for consumer and corporate behavior. These will become the operating structure for the next decade. Companies that hope to lead in this world should ask themselves some fundamental questions:

— How will your customer needs change as we head into a post-crisis "new normal"?

— How will you create human-like interactions with customers you will never meet?

— How will you repair devices you can't touch or hold?

— How will you find your next digital star employee who sits across the globe and is in a different industry?

— How will you create resilience in your supply chain, without tying up more capital?

— How will you shift your costs and operations to variable structures to handle an increasingly volatile and dynamic world?

— How will you bring out digital products in days or weeks, as your competitors are trying to do?

These questions are second nature to disruptive business builders, who are used to overturning assumptions and innovating in the space left when an old assumption is removed. They know that a crisis of this scale brings seismic shifts, changing the expectations for business and creating new opportunities to innovate. They are formulating new solutions to both help resolve the crisis and reimagine their industries in the aftermath. We know there is no going back to the way things were. The goal now is to define the best possible next normal for when the crisis subsides. This article will look at some of the early solutions and outline concrete steps leaders can take to begin their own journeys.

Business building for the crisis and beyond

The extraordinary constraints and imperatives brought on by the COVID-19 crisis have rapidly thrust businesses into challenges they could never have envisioned. Many have had to innovate new capabilities for remote operation almost overnight, complete digital transformations in weeks rather than months or years, and launch new products in a matter of days. We believe the COVID-19 crisis will be a period of substantial business building and innovation. The earliest signs of this are already visible, including the following:

— *Overnight digital transformation.* Faced with guidance on social distancing and increased patient concerns for most in-person doctor/patient consultations, the United Kingdom's National Health Service (NHS) had to orchestrate an immediate shift to video consultations and telemedicine, an enormous undertaking. In select catchment areas, we have seen long-term telehealth plans executed in 15 days or less. With one of the world's largest organizations able to build a robust digital capability almost overnight, old assumptions about what it takes to go digital are being rapidly overturned.

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[1] "See Kevin Buehler, Arvind Govindarajan, Ezra Greenberg, Martin Hirt, Susan Lund, and Sven Smit, "Safeguarding our livelihoods and our lives: The imperative of our time," March 2020, McKinsey.com.
[2] See Shubham Singhal and Kevin Sneader, "Beyond coronavirus: The path to the next normal," March 2020, McKinsey.com.

— *Making the most of data.* Researchers tracking the spread of infection have discovered that some people are willing to share their data for a crucial cause. South Korea's Corona 100m app, which alerts users when they are within 100 meters of locations visited by COVID-19 carriers, is one example. After the app was released, a million South Koreans downloaded it in the space of ten days. A similar app in the United Kingdom relied on voluntarily submitted data from public users. These innovations show greater ingenuity in using data that are already being generated but not used to their fullest, and could potentially fuel a shift in the public attitude toward privacy.

— *Virtual customer engagement.* As the COVID-19 crisis wore on in China, the real estate market, like other sectors, suffered a rapid decline as the buying public sequestered itself at home. The Evergrande Real Estate Group, China's second-largest real estate developer, responded by creating a digital-only experience, allowing customers to engage entirely online and make refundable deposits on properties, overturning long-held assumptions about the need for in-person meetings. Evergrande saw sales soar by 118 percent in February after it launched the new application. Along with others, the firm is pushing on how much of the customer journey can be handled remotely and how much data can be shared.

All of these business builders recognize the world is changing and the rules are being rewritten. This is one of the most important elements of business building. Disrupters rethink assumptions to identify creative opportunities. Nondisruptors become, in effect, defenders of the old status quo.

Business building to reimagine the future: Six archetypes

A crisis like the one we're experiencing now is by definition unpredictable. We can't know with certainty the duration or the severity, but we can begin to think about what the next normal might look like by inferring patterns from past crises.

First, we know this crisis, like the ones that came before, will leave a lasting mark on the world. Not all the changes and innovations that business builders are introducing to the world now will stick, but many will, despite the fact that many would never have been considered pre-crisis. We will not go back to the old ways of doing things.

Second, there is a pattern to the types of innovators that emerge from a crisis, linked to the types of assumptions that they overturn. Overturn an assumption, and the opportunities that emerge form the nucleus of a new company archetype for innovation.

We have seen both of these phenomena before. From the global financial crisis, for example, assumptions about the use of assets and nature of ownership were radically overturned. Businesses became comfortable sharing assets and cocreating with customers and even competitors, and the sharing economy was born. From this archetype of "asset sharer" came some of the world's most successful businesses, all launched in 2008–09, including Airbnb and Uber. A similar archetype emerged around the "gig economy," which Uber also represented, along with Instacart, TaskRabbit, and others. Both these archetypes have persisted long after the financial crisis was resolved.

Already, we can see companies, pushed by necessity, starting to overturn assumptions about the way organizations and consumers operate. Out of this, we have identified six early archetypes for post-crisis business builders:

1. *The remote services provider.* The COVID-19 crisis forced a wholesale shift to online provision for essential services providers such as doctors and teachers. In many countries, online medical consultations and online education have become the norm. Expect this trend to spread well beyond exam rooms and classrooms. Lawyers, architects, and marketers are all beginning to deliver their services in new ways, ranging from basic videoconferencing to virtual reality and automation. Stocks in some of the technology

providers have more than doubled since the start of the crisis. It's one thing to deliver intellectual services this way—we also anticipate this trend will extend to equipment maintenance and other services we think of as in-person only. Imagine if home appliances such as dishwashers were built in a way that nonexpert homeowners could swap out a modular part as easily as they swap out printer cartridges.

2. *The collaboration platform.* The opportunity for collaboration platforms has been building for years, but the need to self-isolate has been a catalyst. Customers and companies are gaining an appreciation for the rich interaction possible between people separated by geography but connected by technology. Online videoconferences, both for professional and social communication, are one example. Education platforms are another. Virti, which has a platform for training healthcare professionals, has already been deployed to 14,000 US healthcare professionals and, as of the end of March, expected to expand to 50,000 more in the following two weeks. Expect collaboration platforms to emerge that move beyond communication and education to areas such as talent development and evaluations, or that are tailored to other professions, such as lawyers, accountants, and engineers.

3. *The dynamic talent deployer.* Post crisis, recruiters will develop new ways to tap the global talent pool, using technology in new ways to source specialists around the world, speed the application process, and smooth labor imbalances. This becomes especially important as talent becomes both more mobile and more virtual. The retailer Woolworths, for example, which needs to hire thousands for its surging grocery business, is exploring offering short-term work, through a streamlined application process, to some of the 20,000 Qantas employees who have been temporarily stood down as a result of the crisis. Many companies are learning now about reskilling at scale, and unorthodox partnerships could become the basis for more agile approaches to talent in the future.

4. *The high-touch digital retailer.* New retail categories that have traditionally required a high-touch experience, because of either the customer base or category itself, will migrate online. The need to self-isolate has driven greater demand for high-end food kits. The United Kingdom's Mindful Chef, for example, saw a 452 percent increase in sales during the first weeks of the crisis. We believe new swaths of customers, such as the elderly who previously did not leverage technology to the same degree as younger cohorts, and new sectors, such as groceries, will increasingly turn to online sales. Other areas, such as real estate, will take on more of a retail feel and also move online.[3] The coronavirus gave an enormous boost to a variety of real estate services, from virtual home tours to virtual tours led by robots. Real estate start-up Zenplace, for example, has seen a 293 percent increase in interest in its smart automated lockboxes and self-guided home tours since early March. Improvements in technology and the use of artificial intelligence (AI) and analytics to deliver ever finer customer insights will drive this trend.

5. *The data visionary.* With fewer people working on site, companies are taking a closer look at data they generate that was previously deemed to be of limited value. They are finding ways through analytics and automation to use that data for functions such as monitoring machinery, a task previously handled by on-site workers that can now happen remotely. In addition, providers are emerging who can combine the data from multiple companies to provide sector-level insights. This has emerged in particular during the crisis in the case of alternative data providers, such as Thasos, who have seen a surge in requests as corporates and investors seek to inform their decisions with previously underused data sources such as real-time mobile location data.

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[3]Vaibhav Gujral, Robert Palter, Aditya Sanghvi, and Brian Vickery, "Commercial real estate must do more than merely adapt to coronavirus," April 2020, McKinsey.com.

6. *The resilient and flexible but not redundant operator.* The COVID-19 crisis has thrown into sharp relief the vulnerability of global supply chains. Emerging from the crisis, we will see a cadre of organizations that differentiate through resilient supply chains and operations, without having to tie up excessive capital. AI is playing a large role in enabling this. In addition, these organizations are flexible with a variable cost base and ready to respond to dynamic changes in an increasingly volatile world. This new model is helping companies with better forecasting too. Blue Yonder, for example, one of the world's largest flexible fulfillment providers, has been drawing feeds from the Centers for Disease Control and Prevention (CDC) into its machine-learning platform to better enable its customers to manage the COVID-19 supply-chain shock. Digital tools are also helping companies identify new sources of resiliency—for example, through digitally clustering potential suppliers according to the capabilities that they have in common. Estimating a medtech company's degree of connectedness, for instance, helped it expand its supplier base by 600 percent.[4]

Business building in the next normal

Challenging assumptions to identify ways to resolve the crisis and reimagine the future is just the first step that successful business builders take.

Successful business builders also bring a different mindset to their operations. In a recent article, we described four activities that distinguish the best of this breed.[5] These activities (summarized in the sidebar, "Four ways to succeed") are true for business builders in all settings; today's extraordinary circumstances are not an exception.

For successful business building, agile ways of working are a given, but in the COVID-19 era they need to be adapted for remote working. Building the processes and communications to support agile dispersed teams takes both care and discipline. In a recent article, McKinsey described lessons learned from China on how to work remotely.[6] The authors cite eight areas to focus on, ranging from structure, people, and culture to process control and communication efficiency, technology enablement, and cybersecurity.

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[4] Knut Alicke, Xavier Azcue, and Edward Barriball, "Supply-chain recovery in coronavirus times—plan for now and the future," March 2020, McKinsey.com.
[5] Matt Banholzer, Markus Berger-de Leon, Ralf Dreischmeier, Ari Libarikian, and Erik Roth, "Building new businesses: How incumbents use their advantages to accelerate growth," December 2019, McKinsey.com

Four ways to succeed

— *Get sponsorship from the top.* Successful business building requires frequent and visible support from leadership. Our research shows that executive sponsorship and alignment is one of the two most-cited factors influencing the success of a business build.

— *Tap into the parent company's unique strengths.* Successful business builders understand their existing strengths and are able to apply them to the new enterprise.

— *Pressure-test assumptions.* Founding teams often overestimate their prospects for success. To fight that bias, business builders continually stress-test and validate critical assumptions. This is especially true for assumptions about the value proposition that need to be tested directly with customers, and includes business assumptions such as operating costs and market size.

— *Build dedicated teams.* Many of the world's most successful companies are serial business builders. They're able to replicate success by building dedicated teams that can evaluate ideas, identify leaders, provide specialist expertise, and otherwise support new initiatives.

Many of these areas are second nature to business builders. Most successful business builders will be familiar with digitally enabled task management through tools such as Jira and Microsoft Planner. And many will use cloud-based tools for communicating, creating content, and sharing content.

However, there are some places where business builders may face additional challenges from the need to work remotely. Best practices for adapting agile teams to dispersed workplaces include the following:

— *Avoid letting remote working upend lively debate.* It's often easier for people to challenge each other and the team in in-person situations, where people can make offhand remarks or can easily take one colleague aside. Encourage dissent in your business-building teams, and create specific forums for doing so (for example, by keeping a chat window open for thoughts and questions during videoconferences).

— *Maintain your external orientation.* Ensure your collaboration extends beyond your organization, and especially ensure it extends to your customer. Find ways to "shadow" customers by doing screen shares to observe the way they work, or using video aimed not at the customer's face but at their behaviors and activities.

— *Keep process structure in place.* Remote teams should be just as rigorous in process management (if not more than) as in-person teams. Agile teams often use regular large-group stand-up meetings, called "ceremonies," and structure work into rigid short-cycle chunks, called "sprints." Maintain the rigor of these, and use large-group communication channels to promote the transparency across work streams that the traditional ceremonies provide.

— *Prioritize culture.* A healthy culture enables creativity and promotes the trust needed to challenge ideas and acknowledge mistakes and pivot. We are seeing business-building teams strengthen their culture with forums for digital social interaction as well as professional interaction. Ideas range from celebrating important events to showing off personal spaces in the frame of videoconferences to 15-person virtual karaoke parties.

These are real challenges, and best practices are being invented in real time. But as teams adapt and log successes, expect remote agile work to become an accepted part of the playbook.

Sustaining beyond the crisis

The capabilities described here emerged in a time of great need, as businesses found disruptive new ways to help protect lives and livelihoods amid the COVID-19 outbreak. However, once an assumption has been challenged, it is unlikely to reassert itself, even after the original crisis passes. Employees won't settle for traditional office life once they've seen that they can work wherever and whenever works for them. The best companies will continue to seek the best talent, regardless of where they are located. Retailers will continue to find ways to humanize the digital experience.

Learning from innovators and business builders is fundamental—not just for recovery from this crisis but for reinvention, again and again. Organizations that adapt to the archetypes that are emerging from this crisis and continue to overturn assumptions in search of new opportunities will emerge from this crisis with the greatest resilience and with the greatest opportunity to define a reimagined future. Is your business ready for the challenge?

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[6] Raphael Bick, Michael Chang, Kevin Wei Wang, and Tianwen Yu, "A blueprint for remote working: Lessons from China," March 2020, McKinsey.com.

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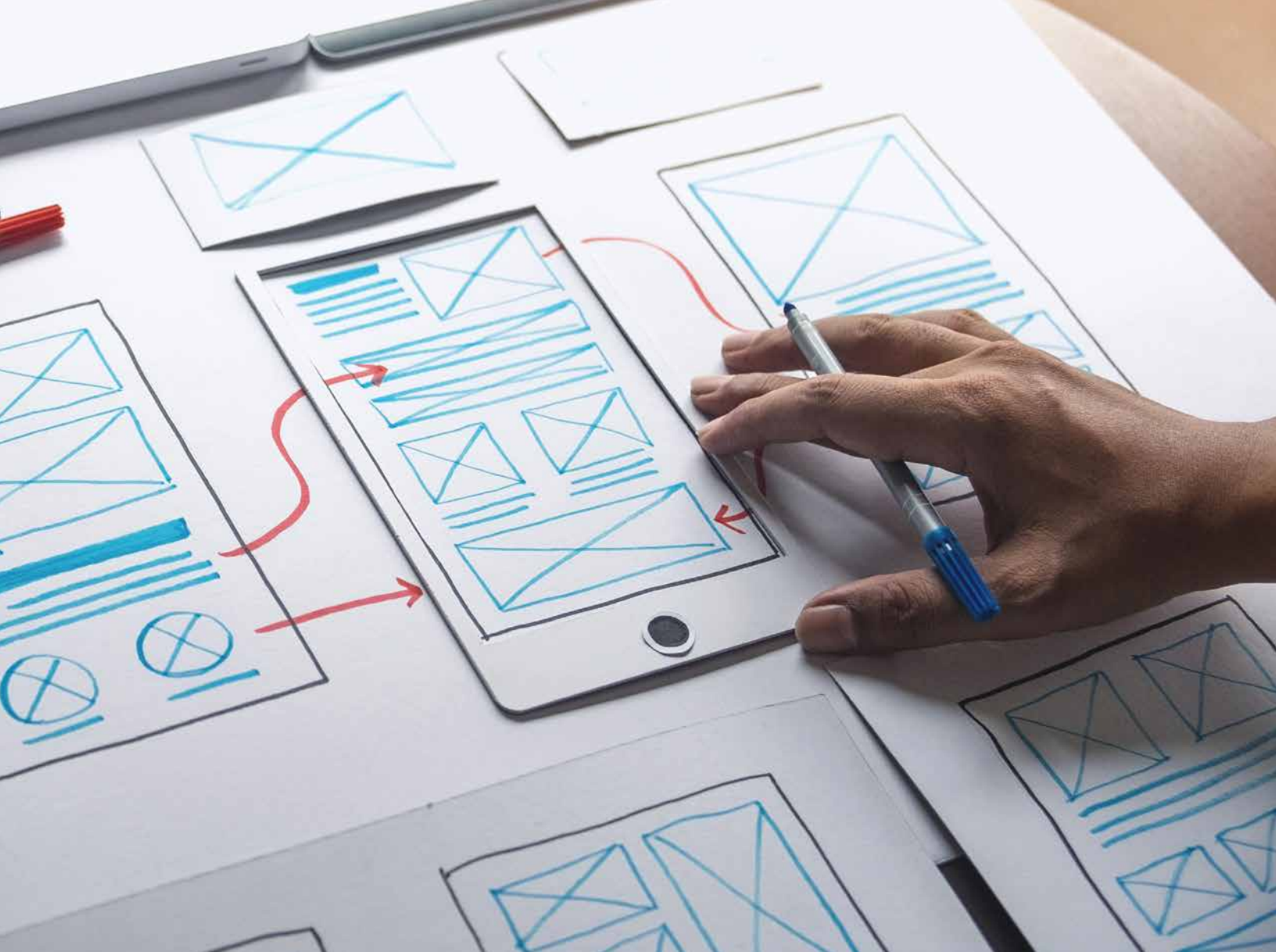
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Building an
e-commerce business:
Lessons on moving fast

With consumers moving online in reaction to coronavirus restrictions, companies
will need to learn how to launch new e-commerce businesses quickly.

by Arun Arora, Philip Christiani, Ralf Dreischmeier, Ari Libarikian, and Hayk Yegoryan

While the full implications of COVID-19 are still unknown, it's clear that the impact on retail is already significant. Emerging evidence points to a significant shift, as customers scale back their shopping in stores and instead go online.

In China, online shopping has increased 15 to 20 percentage points,[1] and e-commerce in Italy has increased 81 percent compared with the last week of February.[2] US consumers have largely followed the same pattern. The COVID-19 crisis is first and foremost a human tragedy, requiring companies to take immediate steps to protect their people. Amid this human cost, companies are also starting to come to terms with the impact of the crisis on their businesses. With offline shopping collapsing, companies' strategies will need to focus on fortifying their web presence and, in some cases, building an online business.

We have found that companies can create a working e-commerce site in much less time than they think. In fact, a poor understanding of what's really possible with digital can be one of the most significant hinderances to moving quickly. As we highlight in *Fast Times: How Digital Winners Set Direction, Learn, and Adapt* (Amazon Publishing, February 2020), low aspirations lead to modest, even negligible, outcomes. In our experience, completely new businesses can be launched in fewer than four months. Normally, a company requires at least six to nine months to get a complete solution up and running (and often considerably longer when outsourcing the work to multiple vendors and agencies, with the increased need for coordination slowing down cycle times).

We had the opportunity to watch this thesis play out in the real world recently at one European retail chain that has around 1,000 brick-and-mortar stores across the world. The chain, owned by a private-equity fund, had no e-commerce presence. Although it had previously considered e-commerce, there were serious concerns about whether it could

ever work, given the assortment, concept, and even brand constraints. Despite these issues, a variety of pressures, from consumer demand to competitive constraints, forced the company to take action.

Thirteen weeks later, it had a functioning e-commerce business in one of the regions it operated in. Not only that, its launch was successful from the first month, generating almost 3 percent revenue growth within the chosen region, tripling average basket size compared with retail stores, and maintaining a high customer-satisfaction score. When COVID-19 started disrupting daily routines in Europe, the e-commerce revenues jumped up threefold almost overnight.

This article describes the main lessons from that program.

Be pragmatic

Before work started on launching an e-commerce business in our example, the company's leadership gathered to discuss the ambition for the endeavor. One word dominated that discussion: "pragmatic." Rather than attempting to launch a full-blown digital business across all markets at once, the CEO opted to go to market fast with a limited offering and in limited geographies, gain strong traction, and then scale up and out aggressively (see sidebar, "Supporting your remote teams").

Within days, a new team created a comprehensive, week-by-week plan that covered everything from creating customer-testing touchpoints to setting up the warehouse with electricity and equipment to photographing and writing copy for every one of the 800 products to go on offer. All nonrelevant initiatives were postponed in favor of efforts that had direct customer impact. The team closely scrutinized every feature and ruthlessly prioritized intermediate release goals for what mattered most. This biweekly review exercise also made room for fixing problems when things inevitably went wrong.

[1] COVID-19 mobile survey, February 2020; n = 1,249 respondents across 46 Chinese cities.
[2] Expert calls; Chiara Bertoletti, "#Coronavirus Nuovi dati sulle vendite della gdo in store e online," *Gdoweek*, March 6, 2020, gdoweek.it.

Supporting your remote teams

As the COVID-19 pandemic spread, it overtook the effort of a retail chain to refine its new e-commerce site. The team, like workers around the world, had to learn quickly how to collaborate with one another while working remotely. The lessons from that experience and others include the following:

— Invest in adoption and standardization. It's not enough to have the best collaboration tools available. The level of people's familiarity with collaboration tools varies, so spend time up front in training people how to use them well. Also standardize which tools to use. In an effort to move quickly, people may just gravitate to what they know best, resulting in the use of incompatible tools.

— Invest in adequate tools and support— for example, pay for upgraded Wi-Fi and distribute 4G or 5G modems.

— Stay committed to what works. Problem-solve the new issues— foreseen and unforeseen—that arise the way you do any other challenge: uncover the problems and innovate solutions by agile trial and error. Maintain frequent check-ins and track progress.

— Understand that in a time of crisis, team members have personal and family responsibilities that they must also handle. Have the empathy and flexibility to enable that.

This lesson was repeated a second time when management reevaluated scaling plans in light of COVID-19. The team focused instead on further strengthening the core functionality of the e-commerce business and providing an easy, dependable way for a locked-down population to shop for what it needed.

Be clear with responsibilities: Assign ownership, not tasks

A crucial element in enabling speed during our example retail chain's launch of its e-commerce business was clearly designating which teams were responsible for which tasks—and then giving them the space to complete their work. Management created four teams with responsibility for specific work streams and ownership over a certain portion of the customer journey. Management then stepped back, giving teams the responsibility and flexibility to solve every unplanned issue that occurred there and pushed them to be creative with solutions. The four teams and their tasks were as follows:

— *The tech-and-design team* was in charge of defining the microservices architecture, including codesigning the online-store concept

with customers and building it iteratively. It also had to develop tech capabilities for connecting the back end of the store with the warehouse-management system, inventory synchronization, and order handling. The team owned the customer journey from the moment the customer arrived to when an order landed on the handheld tablets carried by the pickers in the warehouse. Over time, the tech stack developed to a point at which almost all content-level changes could be done without developer involvement.

— *The operations team* was in charge of setting up the warehouse: establishing packing stations and picking trolleys, setting up the workforce for the warehouse and customer support, liaising with carriers and intermediaries to set up a new relationship, and detailing the procedures for handling all common and edge cases. It owned the part of the journey that started when the warehouse received an order and ended when the customer received their package.

— *The product-assortment team* analyzed the full product assortment available, chose the 800 best SKUs to launch with (based on multiple quantitative and qualitative criteria—

Putting in place the right measures and key performance indicators early in the process of creating an e-commerce business is as important as launching quickly.

for example, "shippability" of items such as ice cream and fragile glassware, sizing to fit existing boxes, and logical fit with other products in the assortment); obtained samples to photograph, measure, and describe; and created creative online-only bundles. It owned the portion of the customer journey covering all of the steps necessary for a customer to find, understand, and choose a product. As such, the team worked closely with the tech-and-design team in the initial phases.

— *The marketing team,* which kicked off nine weeks before the launch, created a detailed marketing launch plan, set up a structured customer-relationship-management system and biweekly campaigns to increase the size of the database by almost threefold prior to launch, worked with an agency to come up with a creative launch campaign, and planned an operation in which all the content and merchandise (such as posters, T-shirts, and bags) would roll out in unison on launch day across offline stores, social media, search advertising, influencers, and various PR channels. This team owned the customer decision journey, from complete lack of awareness to the moment a customer landed on the home page for the first time.

At the end of each day, all the teams came together for an all-hands checkout to update each other

about the newest developments. This habit—along with solid agile ceremonies, such as weekly sprint planning, biweekly demonstrations, retrospectives, and use of collaboration tools (Kanban boards and Slack)—was the perfect counterweight to work-stream independence and ensured that everyone was in sync at all times.

Learn and adapt

Putting in place the right measures and key performance indicators early in the process of creating an e-commerce business is as important as launching quickly. It allows companies to track the progress that matters so that they can learn, adapt, and drive continual improvement. It is not enough to measure overall conversion or conversion by channel. Instead, companies need more granular metrics—for example, to identify relevant customer cohorts, measure microconversions per cohort, and then improve for that use case continually. Metrics or key performance indicators that are too high level don't provide a clear-enough story. This concept, in particular, is crucial because launching an e-commerce presence is not a discrete project but much more a program of continual improvement.

In our retailer example, the leadership decided early on that the goal of the e-commerce initiative was to launch quickly a business that could gain traction within a single region and then to use it to learn and improve before going all out globally. The company

knew that it needed first to build a muscle to operate and optimize a multinational digital business—and that the best way to do that was by learning through doing.

After a successful launch, for example, the team spent a month analyzing pain points and bottlenecks and then experimenting with new solutions to improving the experience continually. It was able to act quickly because it had established a simple spreadsheet model to track progress. The team checked it daily the first two weeks and weekly thereafter. It then added new metrics as goals changed. For example, when focusing on growing B2B segments, it tracked the number of orders and revenue for B2B customers daily. When focusing on improving operations, it tracked pick-and-pack speed and the percentage of fulfilled orders per day.

The team also developed prototypes for various new features to test with customers and abandoned many pet ideas that simply didn't stick. The team had to go back on one of the online-exclusive ideas—staff curated bundles of products based on common occasions, such as birthdays— that tested very well with customers prelaunch but simply didn't perform in reality.

By keeping a weekly sprint rhythm, it was possible to pivot away from poor ideas and generate new ones constantly until the team found ones that worked. Week by week, the improvements and lessons accumulated, and by month three, the e-commerce business had matured into a state at which a good sales day wasn't a victory but business as usual.

———————

Building an e-commerce business from scratch is no small undertaking. But experience has shown that a dedicated program properly structured can not only pull it off but do it far faster than many might think is possible.

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Managing tech for a new era

After the first wave: How CIOs can weather the coronavirus crisis

Chief information officers must act swiftly to manage IT through the pandemic in a pragmatic way.

by Sven Blumberg, Peter Peters, and Christian Stüer

"The new normal is not clear yet, but we need to start moving toward it."

The implications and repercussions of the COVID-19 crisis are far from certain. But as the quote above suggests, technology leaders are now starting to think about how to get past the first wave of crisis management.

This humanitarian crisis is still unfolding: quarantines, lockdowns, and harrowing images of hospitals straining under the weight of sick patients all underscore the devastating human effects of the pandemic. The economic picture for many countries is dire. As we wrote recently, COVID-19 is a crisis that requires companies to address lives *and* livelihoods. CIOs have a critical role to play because social distancing and the lockdown of economies require technology not just to maintain business activities but also to lead businesses.

CIOs must still focus on emergency measures and navigating through the chaos of the first wave of this crisis. But the economic implications require CIOs to start thinking ahead as well and to position their organizations and businesses to weather the downturn.

CIOs are already balancing important priorities across horizons. Polls we conducted during two recent webinars with more than 150 IT leaders highlighted their top concerns: putting in place collaboration tools and operating norms for working from home at scale, a near-term priority, and the increased strain on financials, a medium- and longer-term consideration (Exhibit 1).

Given the gloomy economic outlook, CIOs may be tempted to take a radical slash-and-burn approach in an attempt to shore up IT. That would be a mistake. While containing costs must be a crucial element of the second-wave response, CIOs have an opportunity to accelerate programs and push priorities that can help position the business to succeed when the downturn ends. There's no point in winning the battle but losing the war.

Exhibit 1

High demand for collaborative tools and operating norms and increased strain on company financials are the top concerns for chief information officers.

Top technology concerns for organizations,[1] %

| 32 | 12 | 12 | 5 |
| High demand for collaborative tools, guides, training, and operating norms | Increased cybersecurity threats | Increased strain on infrastructure | Immediate boost in online traffic |

| 22 | 12 | 4 |
| Increased strain on company financials | New tech-enabled business models | Reinvestments in critical areas |
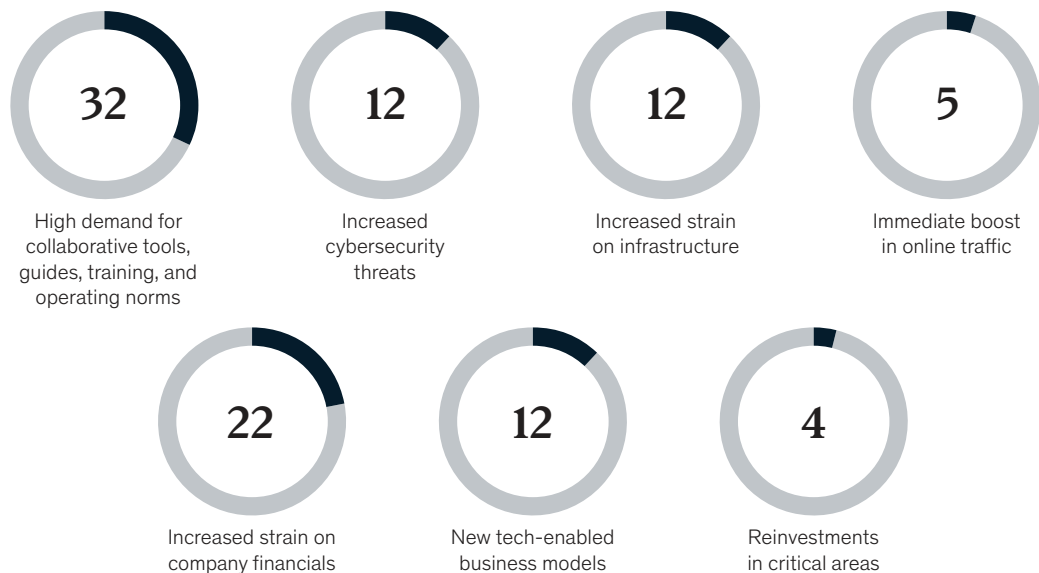
[1] Question: Which of these are key concerns for you and your organization? Percentage of 161 participants attending 2 McKinsey webinars.
Source: McKinsey webinar, March 20 and 26, 2020, "The CIO moment: Leadership through the first wave of the coronavirus crisis"

As CIOs begin to shift their focus toward the next wave of the crisis, they should concentrate on three dimensions (Exhibit 2):

— Stabilize emergency measures.

— Scale down in the interim.

— Pivot to new areas of focus.

These moves will require a corresponding reprioritization of the project portfolio.

Stabilize emergency measures

We expect that the emergency measures taken as an immediate response to the COVID-19 lockdown will be sustained as long as the crisis continues. CIOs should prioritize four areas on this front.

Strengthen remote-working capabilities

Companies moved at mind-boggling speed to support remote work. It's now important to revisit those emergency measures to understand what must be updated, changed, or replaced to deal with issues that continue to hurt productivity.

First, organizations must review their ad hoc vendor-selection procedures in light of the alternatives in the market, increase network capacity, implement scalable support processes, and tighten controls that can secure and deploy temporary solutions at scale.

Second, CIOs will need to address the needs of special user groups, such as contact centers, users of critical systems, and employees of finance functions, to ensure that they can continue to operate in an effective way remotely. For contact centers, this may mean changing the routing of calls to a dedicated COVID-19 subteam to adjust for changes in questions from customers. Users of critical systems may need to build up redundancy in their remote-working setups. One energy company can now run an entire trading floor from the homes of employees, though with limited access to information and slower decision support.

Finally, hardware supply-chain interruptions have already proved to be a significant challenge as peaks in short-term demand for devices and IT hardware confront a breakdown of international logistics. It might be an option, if not a necessity,

Exhibit 2

Chief information officers in the next phase will need to take swift actions along three dimensions.

9 actions to weather the crisis
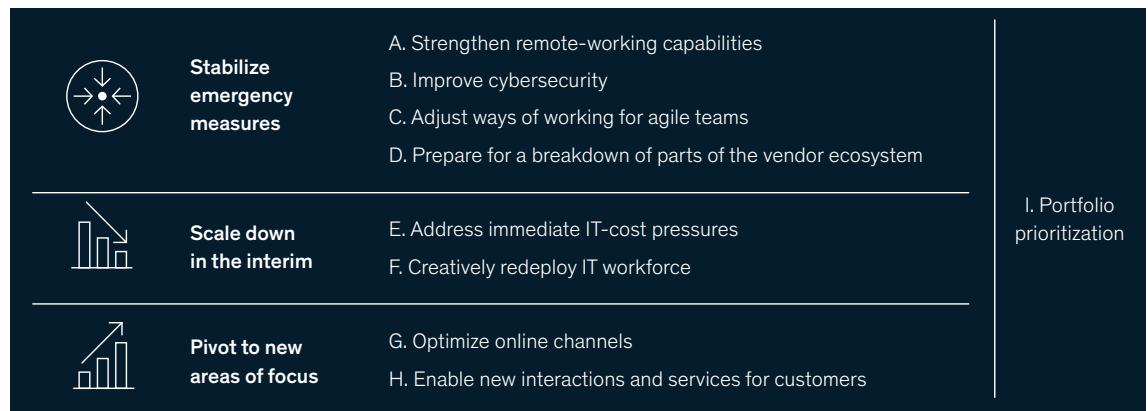
Stabilize emergency measures	A. Strengthen remote-working capabilities B. Improve cybersecurity C. Adjust ways of working for agile teams D. Prepare for a breakdown of parts of the vendor ecosystem	I. Portfolio prioritization
Scale down in the interim	E. Address immediate IT-cost pressures F. Creatively redeploy IT workforce	
Pivot to new areas of focus	G. Optimize online channels H. Enable new interactions and services for customers	

Technology leaders should continue to focus on people-based initiatives that heighten the awareness of risk.

to reprioritize demands by their importance—for example, prioritizing critical "tier 0" users, such as traders in banks or board members; reducing services; determining which of them can be migrated to the cloud; and using alternative purchasing channels and geographies.

Improve cybersecurity
In general, social engineering and insufficient security measures for remote work are the two main cybersecurity risks that organizations face during this time of crisis.

In recent weeks, we have seen an increase in COVID-19–focused social-engineering cyberattacks, which have exploited the current confusion and decreased the effectiveness of the "human firewall" (for instance, the verification of uncertainties with colleagues sitting nearby). CIOs, working with their chief information-security officers, must shore up their cyber protocols to deal with compromised credentials and data, as well as intellectual-property theft, fraud, and other crimes.

To address these problems, technology leaders should continue to focus on people-based initiatives that heighten the awareness of risk. The initiatives may include placing messages on lock screens or pop-up windows and creating secure, dedicated, quick, and effective two-way communication channels to the security team. To support these solutions, organizations need to beef up key processes, such as IT capacity to help employees install and set up security tools, not to mention implementing at scale security technologies such as multifactor authentication-and-control mechanisms that provide remote access to on-premise applications (for instance, teller interfaces).

Adopt new best practices for agile ways of working
Co-location is an important factor for agile ways of working to be productive. Remote work obviously introduces real challenges, such as disrupting a team's continuous alignment, limiting interactions, and complicating agile ceremonies—all of which threaten to drive productivity down. Furthermore, remote environments amplify any previous lack of clarity in roles, responsibilities, and objectives.

Yet there are some companies that have transitioned their digital units almost seamlessly to remote settings, where individual team members feel that they are working more productively than before. One tech company, for example, has fostered an outcome-driven culture that empowers teams to undertake their work outside traditional working hours. In weekly review meetings, they are still held accountable for getting things done.

When we looked more closely at companies that have moved beyond shifting employees to work from home during the first wave of the crisis, we found four differentiating factors: they changed the structure of teams to create smaller agile ones of around five people, strengthened direction setting through leadership, emphasized cultural elements and delegated decisions, with clear accountability, to individual team members, and expanded the use of technology that promotes effective collaboration.

Prepare for a potential breakdown of parts of vendor ecosystems
IT-outsourcing and offshoring vendors, as well as shared-service centers, may well shut down at times.

To address that risk, CIOs are strongly advised to make their vendor dependencies and individual situations transparent—both their location and the fallback options. Mitigation efforts should be prepared not only with existing vendors but also with alternative sources in different regions. A McKinsey survey found that some global capability centers already launching mitigation measures report that "full" (more than 80 percent) production capacity can be maintained for an average of 40 days during the crisis.

Scale down in the interim

Meanwhile, CIOs must address the immediate pressures on IT costs and creatively redeploy the IT workforce.

Address immediate IT cost pressures

With revenues and margins for many businesses plummeting during the crisis, cost pressures on IT will increase. In addition, emergency decisions to manage the initial crisis response might have increased costs—both operational and capital expenditures. Technology and IT departments will be asked to find short-term cost-reduction opportunities to mitigate those effects. CIOs should therefore consider some guiding principles:

— *Be aggressive in IT cost reductions* not only to free up capital but also to invest in capabilities for the "new normal" (more remote work, more online interaction, and more automation). We have found that IT costs can typically be reduced by up to 30 percent quickly.

— *Fully exploit areas of flexibility* to address cost pressures quickly before cutting into capabilities that might affect the future business. In practice, this means deferring nonessential projects and investments that can be reversed, before considering more permanent and potentially damaging changes.

— *Quickly build a task* force to establish the baseline and full potential of cost-reduction

measures that then can be deployed in line with the developing business situation. Additionally, define thresholds when cost-reduction measures affect business operations and align on them with stakeholders.

Creatively redeploy the IT workforce

Disruptive changes in customer behavior and emergency responses have dramatically shifted workloads within organizations. Many on-site operations have been drastically reduced and long-term software-transformation efforts paused, but call centers and online channels still must be scaled up rapidly to meet demand. These realities must guide CIOs when they redeploy their people— which includes reevaluating the role of outsourcing partners. Other examples include back-filling for colleagues most affected by the crisis (for instance, those who must take care of small children or affected family members) and filling roles left open by external workers affected by the crisis.

In the past week, we have also seen many highly inspiring examples of companies repurposing their capabilities to help society cope with the crisis. Tech companies have partnered with the World Health Organization, pooling tech talent to work on projects tackling challenges caused by COVID-19. Another recent example: SAP set up a team of 40 developers and created an emergency web application in 24 hours for the German Federal Foreign Office to manage the repatriation of citizens abroad after the legacy system became overloaded.

We believe this kind of thoughtful and creative redeployment helps organizations cope with the crisis, strengthens the sense of contribution and purpose among employees, and keeps them engaged during a period of remote work.

Pivot to new areas of focus

Looking ahead, CIOs must also bolster the online channels of their organizations and support new interactions and services for customers.

Bolster online channels

With people forced to work at home and to minimize visits to brick-and-mortar stores, online sales and service channels are experiencing a massive spike in traffic—in China, we have recently seen increases of 200 to 300 percent. In the medium term, the traffic baseline for online behavior will probably rise as a result. For now, organizations must act to optimize and bolster their existing online channels to improve customer interactions and solidify retention.

The management of traffic spikes is the most pressing matter for online channels. Mildly invasive short-term measures might include expanding hardware capacity, decreasing or redistributing loads (for instance, by running promotions during off-peak hours), technical optimization (such as horizontally scaling the caching layer), or rerouting of traffic to scalable cloud solutions.

Support new interactions and services for customers

Some companies have responded quickly to the new digital customer behavior by establishing new products, such as mortgage deferrals and crisis-related insurance, or shifting customer interactions to online channels. A government in Western Europe, for example, embarked on an "express digitization" of quarantine-compensation claims to deal with a more than 100-fold increase in volume. Sometimes this effort is about taking loads from call centers, but more often it addresses real new business opportunities. To engage with consumers, for example, retailers in China increasingly gave products at-home themes in WeChat.

Technology departments must anticipate and prepare to offer more of these kinds of digital services, products, and channels. The key to reaching customers will be creating suitable access interfaces between internal IT systems and external social platforms and accelerating the integration of new vendors and distributors.

Portfolio prioritization

Given the enormous pressures CIOs are facing, the entire project portfolio must come under scrutiny to measure the tangible impact it can deliver and how it fits in with the new priorities. One CIO, for example, said that he has already committed himself to continuing only projects that are already nearly complete, reshaping or reducing in scope other projects, and applying a much more rigorous process to the selection and advancement of projects.

We believe that CIOs should apply a crisis checklist to review portfolio projects systematically against key criteria, including these: "Are we still able to deliver, either internally or with potentially affected vendors?" "In what way does the project address new business priorities?" "Does the project assume functioning supply chains?"

With a clear crisis checklist in place, CIOs and their teams can objectively continue, stop, defer, or ramp down projects to maintain focus on what really matters. As the crisis continues to unfold and CIOs develop greater clarity about what the next normal will look like, they will need to adjust their criteria.

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CIOs are already under a lot of pressure. After the first shock and successful response, however, CIOs must now handle multiple planning horizons in parallel to manage the current crisis, prepare for the downturn, and ultimately position the business for success when the recovery comes.
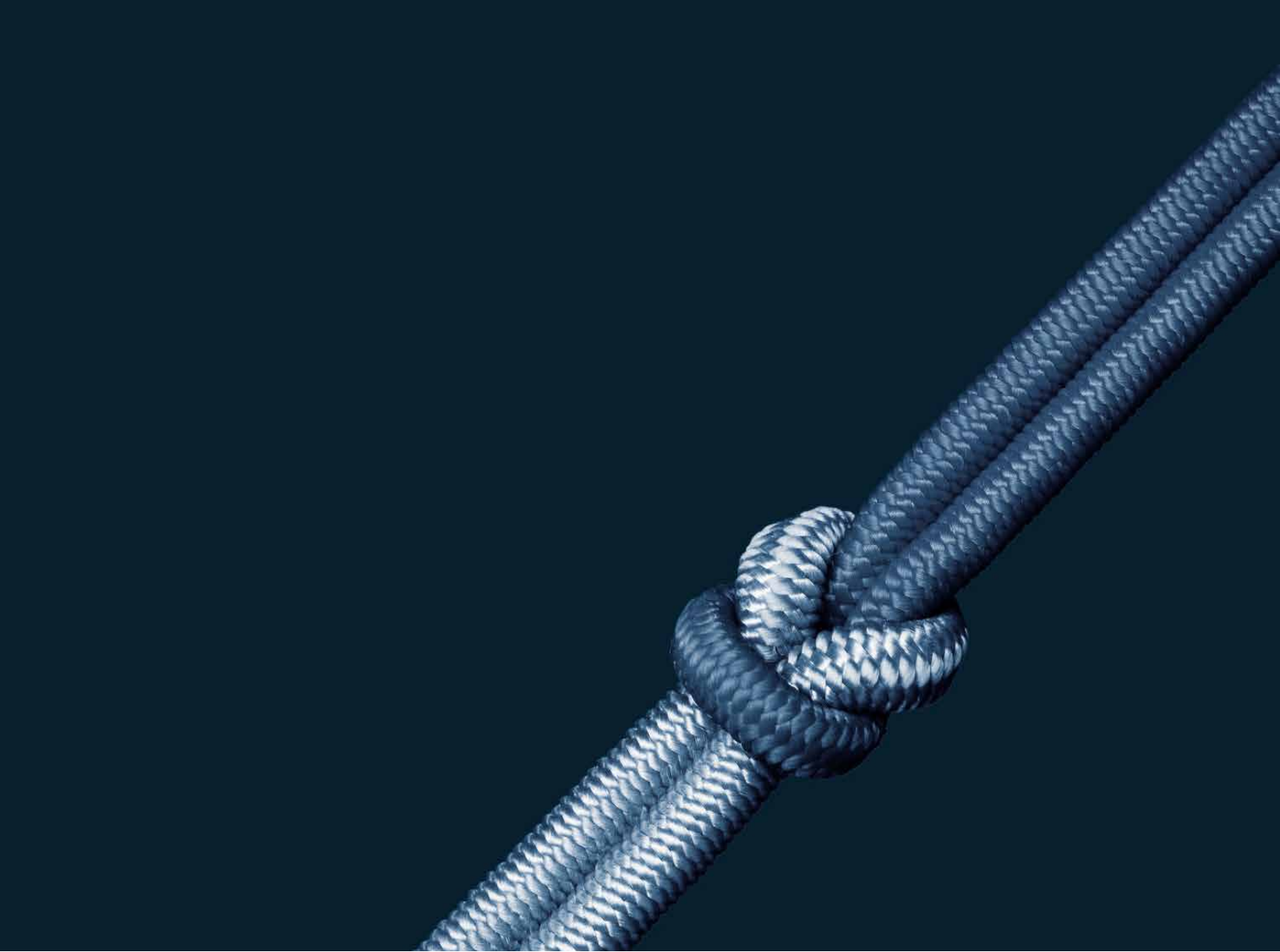
How CIOs can work with outsourcing providers to navigate the coronavirus crisis

From employee safety to work-at-home data security, business continuity, and financial resilience, companies need to follow a clear plan for working collaboratively with their outsourcing providers.

by Rahil Jogani, Naufal Khan, Wasim Lala, Ranjani Ramaa, and Steve Van Kuiken

Governments in many countries around the world are increasingly taking more stringent actions to contain the global COVID-19 pandemic. Strong measures, such as putting in place lockdown and shelter-in-place guidance, have shown promise in blunting the spread of the coronavirus.

However, these measures are also creating specific challenges for CIOs in supporting their organizations and managing the implications of the crisis. Among the many actions CIOs must take in the first wave of their response—from reliably supporting a work-from-home workforce to keeping their colleagues safe to battling cyberattacks—they must also consider whether to manage their outsourced services to ensure business continuity in the light of global lockdowns or to better manage IT costs in anticipation of potentially challenging economic times.

As of this writing, for example, the Philippines (with more than 1.1 million call-center workers) has called for a lockdown for 47 days; similarly, India, a powerhouse in providing IT services (with an estimated 3.1 million call-center workers), has instituted a 40-day lockdown of the majority of business and government establishments. These measures have forced companies to react quickly. Outsourcing providers have placed orders for new laptops at significant volumes and, in the interim, have adopted tactical solutions such as shipping desktops to their employees' homes. At the same time, demands on many outsourcing providers have increased. A media company, for example, had to quickly hire 500 people to manage the sharp rise in call waiting times and increased customer demand for broadband packages as more people worked from home.

The outsourcing industry has been an integral partner in companies' crisis response across sectors. For example, a CIO was facing challenges with call-center support with the lockdown in the Philippines. The company's service provider stepped in to move more than 50 percent of the call-center volumes from the Philippines to India—with no disruption to service or quality—in a matter of days. Such a move wouldn't have been possible if the business had had to rely on its own internal operations. Considering the prevalence and scale of outsourcing in every industry and company, it is now critical for CIOs to work with their providers not only to manage immediate issues but also to position their businesses well for the emerging medium- and long-term implications.

In the past three weeks, we've spoken with multiple senior leaders at global companies and outsourcing providers to better understand what the most successful responses to the coronavirus crisis have been. Based on these conversations and our experience helping companies in previous crises, we believe CIOs should focus their energies and those of their outsourcing providers over the next 60 to 90 days on two areas: 1) resolving immediate issues and 2) building resilience and planning for ongoing COVID-19-related impact.

Resolve immediate issues

Take care of your people—including your outsourced team. Now is the time to be "one" team. COVID-19 is first and foremost a human tragedy. Like all other companies, outsourcing providers are focused on taking care of loved ones and trying to stay healthy while doing their jobs effectively under stressful and difficult conditions. This requires empathy and flexibility from CIOs.

Actions

☑ Bring a human front to all provider interactions. Ask how they are ensuring their employees' well-being, especially during lockdowns.

☑ Work with your providers to develop clear guidelines for the health of employees who need to remain on-site, such as dividing workspace into smaller zones that employees should not cross.

☑ Ask your providers to provide appropriate mental-health support to assist their employees in these challenging times (and, if possible, find ways to supplement the providers' support).

Secure services on critical infrastructure, systems, security, and processes that are essential to run your business. Current lockdown and remote-working operating models are putting unprecedented strains on every outsourcing provider's infrastructure. Some of them, particularly smaller, more nimble players, may have furnished their employees with the right equipment to work at scale. Internet service providers in areas heavily affected by the coronavirus, however, are experiencing service degradation due to capacity overloads or lack of robust infrastructure—particularly true for India and the Philippines—which compromises the ability of their employees to log in to systems and provide support at high levels of productivity. Add to the mix the possibility that critical knowledge of your company's infrastructure, security, processes, and systems may be entrusted to a provider employee who has no backup should he or she fall sick, and your organization's technology ecosystem and business continuity could be at critical risk.

While most CIOs have already taken immediate steps in response to the COVID-19 situation, a deeper integration with outsourcing providers on crisis-response actions should be considered.

Actions

☑ *Ensure critical provider employees in lockdown can effectively work remotely.* Even though most providers have enabled their workforce to work from home, CIOs need to track workforce productivity and the ability to work in real time. Make sure that your providers scale up key enablers, such as: 1) work protocols (roles and responsibilities, decision rights, issue management); 2) processes (communications, workflow); 3) technology (network bandwidth, virtual private network [VPN], collaboration tools, video conferences, security); and 4) people management (health tracking and support). Establish daily crisis-response calls with your outsourcing providers until the new working model proves itself.

☑ *Plan for capacity rebalancing with your outsourcing provider.* Work with your providers to understand current capacity and to plan for the future impact of any declines in productivity. For example, productivity in infrastructure support is expected to drop by as much as 40–50 percent due to a lack of remote infrastructure availability. Design and implement possible rebalancing plans between locations and/or providers. Initially, this may need to be done weekly, since each country might be at a different stage of the COVID-19 outbreak. A company might, for example, move work to Eastern Europe as India and the Philippines go into lockdown. Encourage your providers to provide early warning about impacted resources and services.

☑ *Safeguard continuity of outsourced critical hardware and infrastructure services.* Make a detailed day-by-day plan with your outsourcing providers to monitor, address, and track developments with data centers, critical servers, and network support, accounting for both increased network usage and reduced productivity of both client and provider employees.

☑ *Set up and confirm compliance with the right offshore security protocols.* It's critical to ensure that all provider employees safeguard and handle all data, especially personally identifiable information (PII), the right way, even in remote locations. CIOs should make sure that providers have safe remote-working protocols and procedures for threat identification and escalation. Consider, for example, using multifactor authentication to derisk access to sensitive data and working with providers to shorten patch cycles for essential work-from-home systems such as VPNs and endpoint protection to reduce the risk of data being stored at endpoint devices while considering latency issues.

☑ *Set up a virtual command center.* CIOs need to pull together a team to help ensure technology uptime and enable critical "crisis-time" business requirements—mission-critical systems, inventory data availability,

and payments, for example. Some of these may require changes to systems for remote business users. Stalled workflows may need to be adapted; instead of printing invoices, for example, perhaps scan them to PDF in a shared folder.

One public-sector organization set up a command center in a matter of days to identify and support critical business needs. It also tracked and reported on all critical system-usage metrics, such as number of transactions, by remote users. This allowed it to proactively identify and resolve bottlenecks.

☑ *Rapidly reduce noncritical demand and usage in the short term to ease the burden.* While most outsourcing providers are running at full production capacity without a significant drop in service levels, they will likely run into capacity shortages as the lockdowns continue. Ensure that available capacity is being wisely used. Reassess all applications for true criticality and 24/7 support, reduce service-level agreements for nonpriority tickets, and, if facing network issues, move to audio conferences as opposed to video conferences.

☑ *Ensure business process outsourcings (BPOs), call centers, and help desks are ready for increased volume and crisis-related customer questions.* Many call centers and other support services have seen a surge in calls even as capacity is under pressure from lockdowns and quarantines. CIOs should share weekly workload forecasts with providers and work with them to identify options to address potential surge capacity, including how they will increase staff as needed. CIOs should also work proactively with the business side to identify and address emerging customer and employee FAQs and craft communications for providers. One banking organization, for example, realized that high call volumes were from customers who wanted to refinance their mortgages, but the call-center operators had no guidance on how to respond.

Build resilience for ongoing COVID-19 effects

Proactively collaborate with your outsourcing providers to prepare for what's next. Once the critical needs have been addressed, CIOs should then be proactive with their providers in addressing the likely ongoing effects of this crisis. These might include business-continuity planning for possible capacity reduction, dealing with issues around remote work on critical technology programs, and developing approaches to address new needs as they emerge.

Actions

☑ *Build real-time crisis-monitoring dashboards across all outsourced services.* Work with your providers to build "easy to access" real-time dashboards to track the right set of metrics—status, service levels, capacity across locations, areas of risk, and so on.

☑ *Assess options to back up capacity for critical subject-matter experts.* Identify critical subject-matter expert roles with the providers, build backup plans (documentation and knowledge transition) to back up resources. Assess if your providers can use or share capacity across locations or services in case of shortages.

☑ *Develop disaster-mitigation plans for various outsourcing scenarios.* Work with your providers to identify potential scenarios, including a full shutdown of their services. What if networks in India deteriorate rapidly under high loads, for example? Develop specific mitigation plans: Could the provider move critical activities to on-site facilities and balance the load across various services?

☑ *Reallocate resources to critical projects.* Work with your providers and business partners to identify and prioritize technology solutions that are critical for the business and its customers—critical patient journeys in healthcare systems, perhaps, or inventory and supply-chain analytics for retailers. Ask

your providers to find out if there are common "industry" solutions that you can benefit from. Consider reallocating resources from projects that are no longer a priority to those that are.

Have honest discussions with your providers on the financial impact of the COVID-19 crisis, with the goal of finding the best outcomes for everyone. As companies come to terms with the human toll of the COVID-19 crisis, they also need to work closely with their providers to work through the financial implications and find solutions that can benefit both parties.

Actions

☑ *Assess the long-term partnership with providers.* As CIOs consider the financial costs of the crisis and assess ways to better manage spend, there will be strong temptations to cut back on some outsourcing. To properly assess the relationship with their providers, CIOs will need to take a hard look at their road map and the capabilities they will need in the future, once the recovery starts. Knee-jerk cost cutting may incur greater costs later.

☑ *Work with your providers to improve your financial resilience.* Assess how providers can help your organization weather the crisis, perhaps by adjusting the mix of labor in locations, pushing out payments, or implementing lean transformations. Understand each party's needs and set up financial arrangements accordingly. For example, one organization changed the spend mix from capital expenditures to operating expenditures with its provider, thus providing immediate cash benefits to its provider—in return for favorable in-year credits redeemable at the end of the year or in the following year. Explore all options to cut discretionary spending from the contracts, even minor spending, such as travel and expense line items.

The COVID-19 pandemic has clearly highlighted the need for critical technology resilience and strong partnerships with outsourcing providers, and it may dramatically shape the nature of the outsourcing industry for years to come. Business-continuity planning with providers, for example, will not merely be a "check the box" exercise but an area of differentiation defined by such concerns as how quickly a provider can lift and shift workloads across geographies.

Becoming comfortable with remote working also potentially provides CIOs with an opportunity to accelerate the shift to new operating models. Being able to work with talent in any location can empower teams to work successfully without in-person face time, institutionalize agile application-development methodologies for distributed or remote work at scale, build support models with the flexibility to ramp up and down quickly across locations, and potentially increase outsourcing of nonstrategic and back-office services. In some cases, it may also make sense to work with outsourcing providers with the capabilities to accelerate important transformational programs, such as the shift to digital channels or development of new business models. One organization, for example, is now putting together a task force with providers to automate its paper-based invoice-reconciliation processes, which was previously done manually by 40 to 50 full-time employees.

Whatever the path, CIOs will need to work in true partnership with their outsourcing providers to change the delivery of technology services not only to manage this crisis but also to power the business forward.

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What's on CIO's minds during the coronavirus crisis

As CIOs navigate the COVID-19 crisis, they are managing myriad issues while also needing to act quickly.

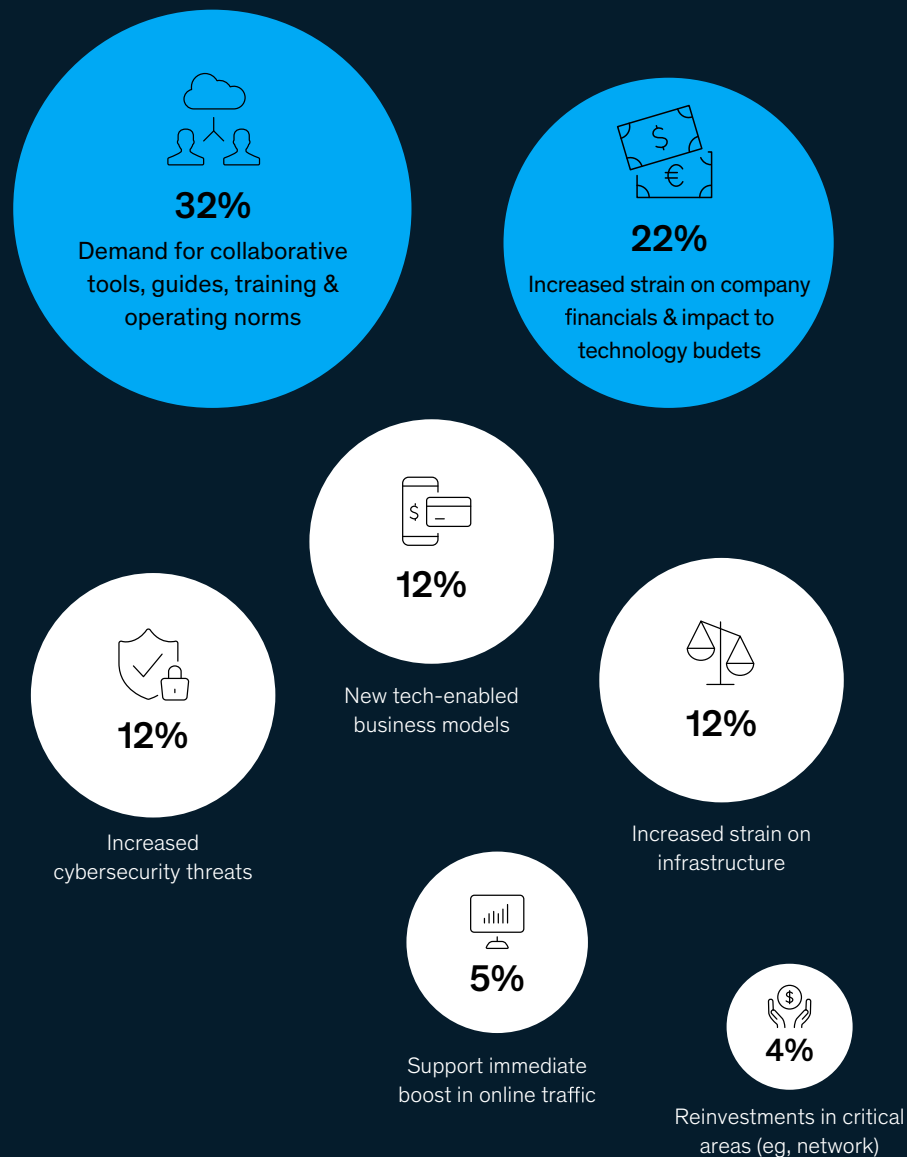*by Isha Gill, Rahil Jogani, Robert Levin, and Ankita Sodani*

In a series of webinars on technology during the COVID-19 crisis, we heard from about 300 CIOs and technology leaders about what's on their minds now.

Dual focus on crisis response

Ramp up of COVID-19 is requiring CIOs to think and act quickly on leadership and technology challenges

Top-of-mind technology priorities for organizations, % as of 03/26/2020
(COVID-19 ramp-up status: 8 weeks in China, 4 weeks in Italy, 3 weeks in US)

32%
Demand for collaborative tools, guides, training & operating norms

22%
Increased strain on company financials & impact to technology budets

12%
New tech-enabled business models

12%
Increased cybersecurity threats

12%
Increased strain on infrastructure

5%
Support immediate boost in online traffic

4%
Reinvestments in critical areas (eg, network)

CIOs are seeing record rates of adoption for new technology, such as connectivity tools, and, more broadly, prioritizing technology interventions to support the organization, such as providing digital solutions to enable B2B sales in a remote environment.

CIOs are also evaluating the potential impact of the economic downturn. Many are beginning to rethink their budgets and are prioritizing initiatives that generate savings and cash. In our experience, the best CIOs are also keeping a close eye on what generates value for the business and thinking about how to invest in those initiatives so the business can both weather the downturn and come through it in a strong position.

Response plans emerging across multiple horizons
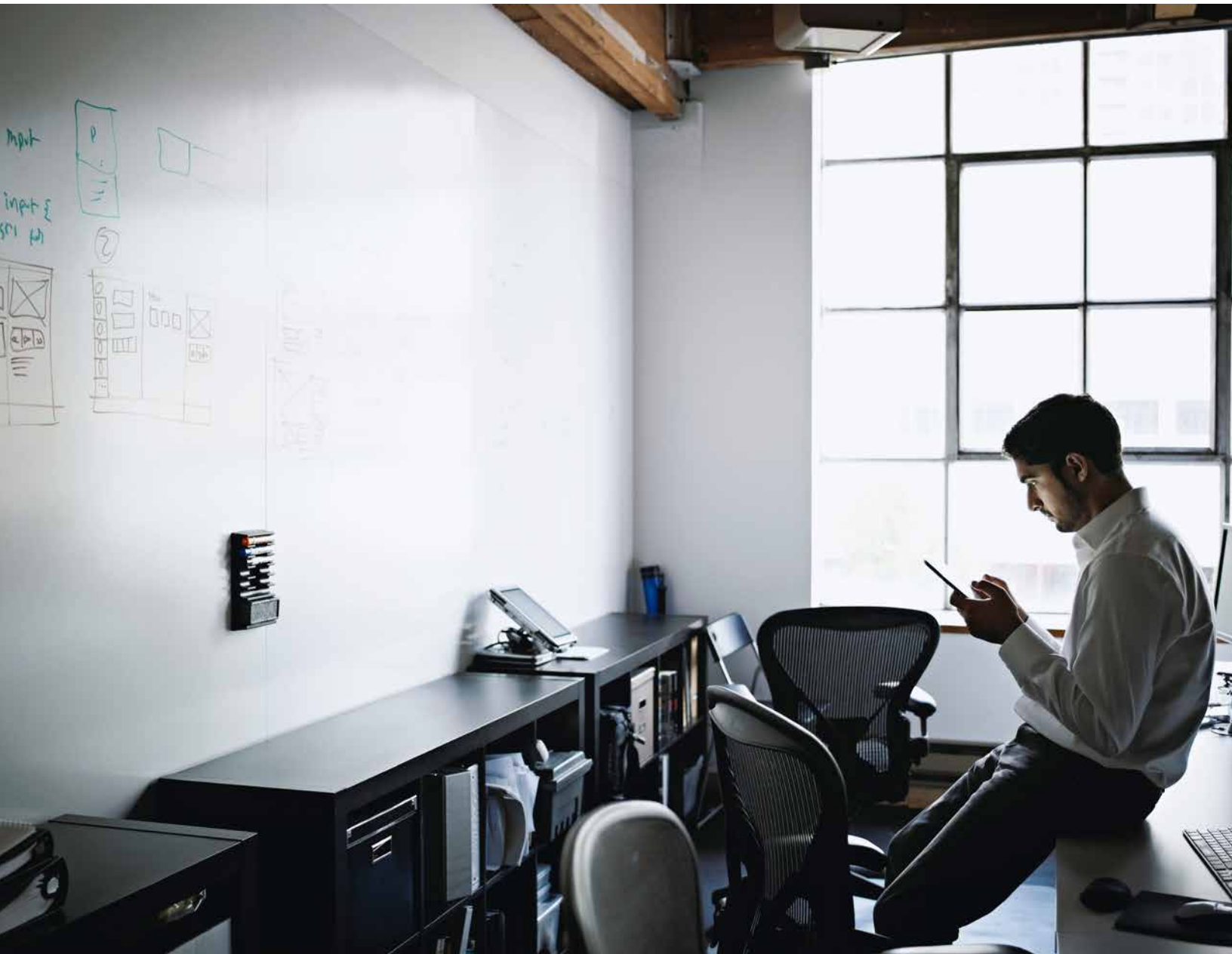
Technology organizations are balancing response plans between immediate preparedness and planning for the next normal

Most challenging COVID-19 technology actions to implement,[1] % as of 03/26/2020
(COVID-19 ramp-up status: 8 weeks in China, 4 weeks in Italy, 3 weeks in US)

Wave 1
Focus on what matters now

Take care of your people	27
Drive adoption of new ways of working	15
Communicate consistently, confidently, and reliably	14
Get beyond the tech to make work from home work	14
Be proactive with security	12

Wave 2
Stabilize critical infrastructure, systems, and processes

Enable the shift in business processes	19
Stabilize critical infrastructure, systems, and processes	15

Wave 3
Anticipate and prepare for the new normal

Stay the course on key priorities	16
Understand implications of the new normal	13
Stay focused on customers	12

[1]Figures do not sum to 100%, because respondents could select multiple options.

Source: Two McKinsey webinars with 300 CIOs and technology leaders across 25 countries;
World Health Organization (WHO) for > 100 infections by country

Not surprisingly, CIOs are overwhelmingly focused on immediate solutions to support their people and the business. CIOs are moving to provide flexible and secure work arrangements, such as managing flexible shifts and preparing for absences, and putting in place work-safety protocols for those who still must come into work by, for example, establishing zones of work and assessing who really needs to be on the premises. They are also actively shifting resources to support the surge of customers purchasing online, including scaling network capacity and providing support for websites and call centers.

Reassuringly, a substantial number of CIOs are also focused on the longer-term needs of the business by staying the course on important priorities, such as digital and technology enablement, cloud migration, and agile adoption. We know from past crises that companies that thoughtfully invest fare best during and after downturns.

With the implications of the COVID-19 crisis still playing out, CIOs have a crucial role to play in navigating the uncertainty and positioning their businesses to prevail through the downturn and beyond.

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A practical way for CIOs to manage IT costs through the COVID-19 crisis

A skillful CIO can not only cut current IT costs but also help position the company for recovery and future growth.

by Sven Blumberg, Peter Peters, Gérard Richter, and Christian Stüer

As COVID-19 continues to spread and casualties mount, meeting the humanitarian challenge is the number one priority for businesses. At the same time, it's becoming clear that many countries are already facing a severe economic downturn. While CIOs currently are focusing on coping with the operational challenges of the crisis, their attentions are already squarely on prudent IT cost management. In reviewing their cost options, CIOs need to assess their business's strategic context to understand where cuts and investment are needed. As the CIO of one energy company said, "We need to bring costs down quickly, but in a smart way."

In many cases, CIOs have already started to identify first reductions and make them. These cost-management efforts, however, have traditionally fallen far short of what's possible—and what might be necessary in the near future. There are three things CIOs can do to identify and, if needed, release tens of millions of dollars in spend:

— *Define your full arsenal of cost-reduction measures.* By understanding the full range of available measures, CIOs can proactively develop a clear point of view about which cuts (and potential associated risks) are possible and when to make them based on how the business situation unfolds.

— *Take advantage of the flexibility built into IT.* As much as 30 percent of IT spend can be saved by taking measures that leverage the flexibility built into the cost base. These might include reducing demand volume and service levels, eliminating discretionary spend, delaying nonessential projects, or decommissioning applications with little usage.

— *Invest in business productivity and the next normal.* The CIO needs to balance cost-reduction efforts with the need to invest in a changed business operations model for the new normal after the crisis.

These measures can help the CIO work proactively with the CEO and C-suite to unlock savings that both ensure business continuity and can be redirected into investments to fit new business priorities. In this way, he or she can position IT as a function that leads the business through the downturn and beyond.

Define your full arsenal of cost-reduction measures

Most, if not all, CIOs have defined cost targets in preparation for the downturn that is already upon us. Top CIOs go a step further by developing a holistic point of view about possible savings, how to prioritize them—based on their potential size, feasibility, speed of capture, and their effects on the business and its future readiness—and when to implement them, based on how the COVID-19 situation unfolds. Developing this complete arsenal of options proactively allows the CIO to be prepared to make decisions thoughtfully, strategically, and in close alignment with business leaders.

To develop a full arsenal of cost-reduction options and plan for how best to implement them, we recommend the following steps:

1. Establish a baseline of all IT costs, including shadow IT and separate digital initiatives. Determine the drivers for each cost category, how much they each contribute to overall costs, and how much of this cost base scales up or down with demand. For many organizations, this is a necessary effort, since it hasn't been a focus of attention in recent years.

2. Develop a view of the full savings potential based on the IT cost analysis, and define the necessary measures to reach the bare minimum of services and capabilities needed to run IT. Here it is critical to challenge the typical barriers that hinder the ability to reduce demand—such as the "need" for multiple devices when fewer would suffice, to generate reports that are outdated in the current circumstances, or to "absolutely have" certain systems, even if they have few users or provide only marginal value.

3. Cluster the measures into implementation waves based on feasibility, value, "reversibility" (How easy is it to reverse the measure taken?), and business impact. Then define the optimal sequencing of the implementation of the clusters, based on business priorities and dependencies.

4. Tailor the sequencing of cost-reduction clusters to business scenarios that reflect how the environment could change during the downturn. This might range from "full implementation of all waves in parallel" for companies in dire economic distress to "simple measures only" where the situation is less critical. This sequencing should be reevaluated after no more than three months (Exhibit 1). With this model in hand, CIOs can have detailed conversations with the CEO and C-suite about options, trade-offs, and the strategic rationale for various actions.

5. Prepare for the implementation of each measure by identifying necessary skills, staff, cost, and ways to proactively mitigate risks for operations and customer perception. Typically, these plans need to be tightly aligned with the crisis plans of each business, with respect to both target and approach to minimize disruptions.

To execute on these options effectively, based on how the business situation evolves, the CIO should set up a cross-functional IT "plan-ahead" team consisting of experts in IT control functions (such as risk), IT procurement, architecture development methods (ADM), and infrastructure. They will work closely with business units to coordinate cost-reduction waves based on performance measures.

Once the planning phase is complete, good plan-ahead teams deploy their experts to help guide and drive various implementation measures. To be effective, however, they need adequate budget and resources, cross-business decision authority, and a fast escalation path to the C-suite to resolve issues. Throughout the whole effort, the plan-ahead team should have a tight grip on any new spending and should limit investments to high-value opportunities that help to prepare the business for the next normal.

Take advantage of the flexibility built into IT

While IT is usually perceived as a fixed cost, most IT budgets have plenty of flexibility built in to "breathe" with the business, adapting to changes in business cycles and demands. In a crisis, taking advantage of that flexibility and extending it is the fastest and most effective way to reduce costs. From past experience, we know that IT costs can be reduced by up to 30 percent by taking a "bare minimum" approach that allows IT to continue operating at planned volumes but not more. These cuts can therefore be made in line with business performance and with little effect on IT performance. Some of these cuts are easy to address immediately, while others require changes to contracts or the IT operating model.

Flexibility-driven reductions range from the obvious—project-portfolio pruning, contractor furloughs, stopping new hardware purchases, going to lower service levels—to the more sophisticated, such as decommissioning systems with low usage, limiting capacity of development environments, or reducing the availability of on-site support.

Many CIOs are already implementing some of these actions in their own area of responsibility. But the big unlock comes from working with the business to understand where there is reduced demand, and then dialing back the support of IT services and systems. One company recently reduced IT costs by 20 percent within six months simply by limiting day-to-day demand for services and applications such as maintenance and shifting from on-site to remote support, without even touching the project portfolio or renegotiating contracts.

Exhibit 1

Establish phases of IT cost reductions organized by different business scenarios.

IT cost levers ■ Start immediately ■ In ~3 months ■ In ~6 months

Business scenarios	Phase 1 Short-term measures with no sustainable business impact	Phase 2 Short-term measures with business impact	Phase 3 Short-term measures that are hard to reverse	Phase 4 Medium-term measures that need preparation	Phase 5 Medium-term measures that need investment
Scenario 1 Weather the storm	Start immediately				
Scenario 2 Create a savings umbrella for 2021	Start immediately	In ~3 months		Start immediately	
Scenario 3 Prevent business discontinuity	Start immediately	Start immediately	Start immediately		
Scenario 4 Prepare for longer recession	Start immediately	In ~3 months	In ~6 months	Start immediately	In ~6 months
Scenario 5 Prepare for shift in business model	Plus investments into business	In areas with declining business models	In areas with declining business models	In ~6 months	In ~6 months

Note: The situation will evolve over time, so release phases and scenarios should be reevaluated often.

Some of these actions may not be possible immediately, such as negotiating new contracts or establishing new technology (Exhibit 2). But during a crisis, there are often plenty of opportunities to adapt contracts and make slight shifts in technology that will unlock value within six months. Some vendor contracts, for example, include contingencies that allow reductions in services quickly, often within three to six months. "As-a-service" technologies, such as infrastructure as a service (IaaS) or platform as a service (PaaS), can be established and effective within three to six months in selective areas.

Exhibit 2

Develop a clear view of which levers you can pull immediately and which will require more time.

● **Might be conflicting with new normal**

Cost type	Addressable immediately* Savings driver: Demand and price	Addressable within months* Savings driver: Price and contracts	Flexibility factor	Your cost base
External contractors	Stop project support No renewal of contracts Reduce rate card and time commitment	Replace contractors in line functions with internals	100%	
Services	Reduce volumes within contract limits Reduce service levels within contract limits Stop or delay projects	Renegotiate contracts ● **Enhance self-services** Establish new business service catalog Stop offshore services for end-of-life applications ● **Reduce network quality (internet vs direct line)**	30%	
Software	Stop maintenance for end-of-life applications Reduce license volumes within contract limits	● **Delay or avoid upgrades**	20%	
Hardware	Reduce capacity (eg, development environments) Increase archiving Reduce service levels (eg, failover, redundancies)	Delay or avoid reinvestment Reduce number of end-user number per user ● **Restrict cloud and data-center workloads**	20%	
Internal staff	Reduced working hours Hiring freeze	Accelerated retirement ● **Delayer IT organization** Review location mix	10-20% (depending on region)	

"Bare minimum": Σ = EUR xx

* Examples

If these measures aren't sufficient to achieve cost-reduction targets, CIOs can cut into capabilities that support the business by decommissioning live systems, reducing infrastructure capacity, or completely resetting the project portfolio, which overall may add another 20 percent in savings. These measures can ensure survival, but they typically need to be reversed at some point because they are so drastic that they can deepen or prolong economic distress.

Invest in business productivity and the next normal

In times of crisis, when companies need to make significant cost reductions, the CIO is always in an interesting spot. While IT must contribute to overall cost savings, it must also optimize the performance of the business. In the 2008–09 financial crisis, for example, as much as 30 percent of IT cost savings were reinvested into business performance.

How well CIOs manage such investments can determine how effectively IT can drive business performance overall.

By working closely with business units, the CIO can invest in capabilities that reduce costs for the business, such as process automation, or enhance its ability to drive revenue, such as building out digital channels. The CIO can also rationalize and modernize applications to sustain savings in IT or the business.

There are four categories of investment that the CIO should prioritize:

1. *Deploy applications, backbone systems, and infrastructure* to support the accelerated shift of customers and suppliers to online channels.

2. *Transform parts of the architecture* to build in more flexibility in order to lower fixed operating costs—for example, using the flexibility of cloud services to consolidate legacy solutions. After the financial crisis in 2008–09, many companies used IT transformation measures to sustain cost savings over years. Note that measures such as cloudification typically take longer than a year.

3. *Automate business processes.* The combination of distributed/remote working and a drive for enhanced efficiency should propel the next wave of process automation based on robotics, workflow automation, and artificial intelligence.

4. *Sustain and enhance support for remote working.* Given the shift to working from home, it might become standard to supply parts of the workforce with a sophisticated, stable, and secure remote-working capability at scale. To do so, the infrastructure for remote access must be enhanced and hardened to support remote-working models.

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The CIO needs to reduce costs quickly and thoughtfully, while also positioning the organization to drive new growth and innovation for the next normal. He or she is the person who will have to balance the pain of cost-reduction measures with the potential value to the business of reinvested savings. In navigating these twin pressures well, the CIO can not only ensure business survival but also position the business to succeed in the next normal.

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The consumer-data opportunity and the privacy imperative

As consumers become more careful about sharing data, and regulators step up privacy requirements, leading companies are learning that data protection and privacy can create a business advantage.

by Venky Anant, Lisa Donchak, James Kaplan, and Henning Soller

As consumers increasingly adopt digital technology, the data they generate create both an opportunity for enterprises to improve their consumer engagement and a responsibility to keep consumer data safe. These data, including location-tracking and other kinds of personally identifiable information, are immensely valuable to companies: many organizations, for example, use data to better understand the consumer's pain points and unmet needs. These insights help to develop new products and services, as well as to personalize advertising and marketing (the total global value of digital advertising is now estimated at $300 billion).

Consumer data are clearly transforming business, and companies are responsible for managing the data they collect. To find out what consumers think about the privacy and collection of data, McKinsey conducted a survey of 1,000 North American consumers. To determine their views on data collection, hacks and breaches, regulations, communications, and particular industries, we asked them pointed questions about their trust in the businesses they patronize.

The responses reveal that consumers are becoming increasingly intentional about what types of data they share—and with whom. They are far more likely to share personal data that are a necessary part of their interactions with organizations. By industry, consumers are most comfortable sharing data with providers in healthcare and financial services, though no industry reached a trust rating of 50 percent for data protection.

That lack of trust is understandable given the recent history of high-profile consumer-data breaches. Respondents were aware of such breaches, which informed their survey answers about trust. The scale of consumer data exposed in the most catastrophic breaches is staggering. In two breaches at one large corporation, more than 3.5 billion records were made public. Breaches at several others exposed hundreds of millions of records. The stakes are high for companies handling consumer data: even consumers who were not directly affected by these breaches paid attention to the way companies responded to them.

Proliferating breaches and the demand of consumers for privacy and control of their own data have led governments to adopt new regulations, such as the General Data Protection Regulation (GDPR) in Europe and the California Consumer Privacy Act (CCPA) in that US state. Many others are following suit.

The breaches have also promoted the increased use of tools that give people more control over their data. One in ten internet users around the world (and three in ten US users) deploy ad-blocking software that can prevent companies from tracking online activity. The great majority of respondents—87 percent—said they would not do business with a company if they had concerns about its security practices. Seventy-one percent said they would stop doing business with a company if it gave away sensitive data without permission.

Because the stakes are so high—and awareness of these issues is growing—the way companies handle consumer data and privacy can become a point of differentiation and even a source of competitive business advantage. The main findings of our research are presented below. We then offer prescriptive steps for data mapping, operations, and infrastructure, as well as customer-facing best practices. These can help companies position themselves to win that competitive advantage.

A matter of trust—or a lack thereof

Consumer responses to our survey led to a number of important insights about data management and privacy. First, consumer-trust levels are low overall but vary by industry. Two sectors—healthcare and financial services—achieved the highest score for trust: 44 percent. Notably, customer interactions in these sectors involve the use of personal and highly sensitive data. Trust levels are far lower for other industries. Only about 10 percent of consumer respondents said that they trust consumer-packaged-goods or media and entertainment companies, for example (Exhibit 1).

Exhibit 1

Consumers view healthcare and financial-services businesses as the most trustworthy.

Respondents choosing a particular industry as most trusted in protecting of privacy and data, % (n = 1,000)
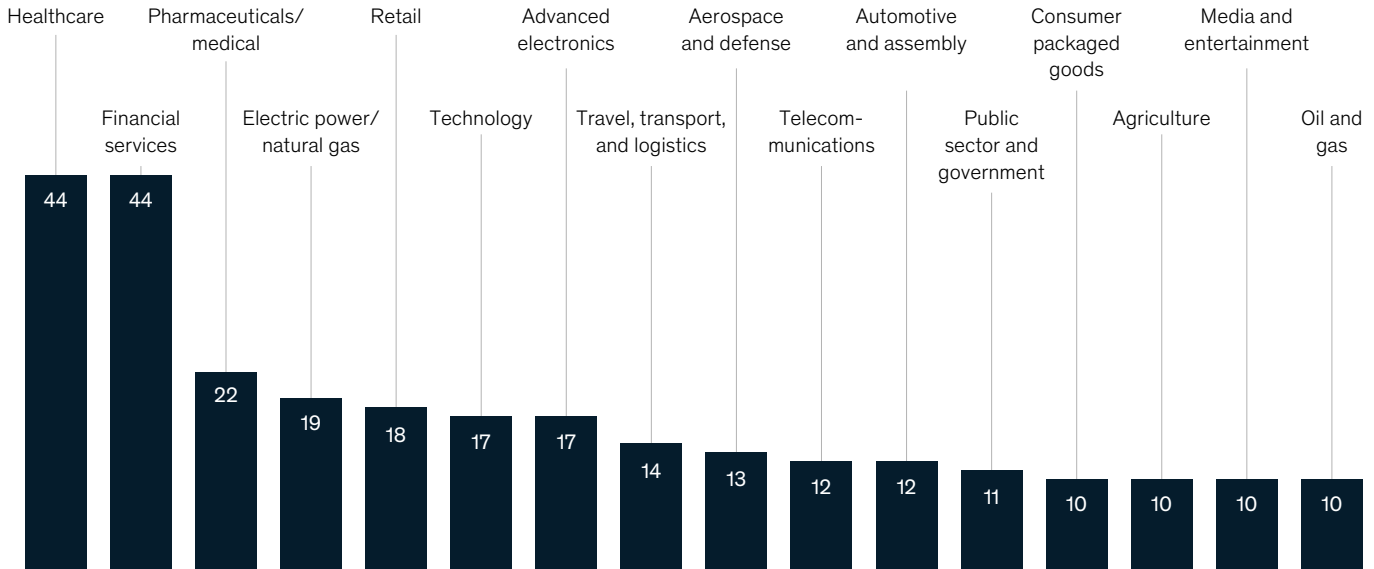
Source: McKinsey Survey of North American Consumers on Data Privacy and Protection, 2019

About two-thirds of internet users in the United States say it is "very important" that the content of their email should remain accessible only to those whom they authorize and that the names and identities of their email correspondents remain private (Exhibit 2).

About half of the consumer respondents said they are more likely to trust a company that asks only for information relevant to its products or that limits the amount of personal information requested. These markers apparently signal to consumers that a company is taking a thoughtful approach to data management.

Half of our consumer respondents are also more likely to trust companies that react quickly to hacks and breaches or actively disclose such incidents to the public. These practices have become increasingly important both for companies and consumers as the impact of breaches grows and more regulations govern the timeline for data-breach disclosures.

Other issues are of lesser importance in gaining the consumer's trust, according to the survey: the level of regulation in a particular industry, whether a company has its headquarters in a country with a trustworthy government, or whether a company proactively shares cyber practices on websites or in advertisements (Exhibit 3).

Consumer empowerment and actions

Given the low overall levels of trust, it is not surprising that consumers often want to restrict the types of data that they share with businesses. Consumers have greater control over their personal information as a result of the many privacy tools now available, including web browsers with built-in cookie blockers, ad-blocking software (used on more than 600 million devices around the world), and incognito browsers (used by more than 40 percent of internet users globally). However, if a product or service offering— for example, healthcare or money management—is

Exhibit 2

Consumer privacy and protection concerns vary by type of digital data.

Relative importance by data type, % of respondents (n = 792)

	Very important	Somewhat important	Not too important	N/A
Content of email	68	13	15	4
Identity of email correspondents	62	16	16	6
Content of downloaded files	55	19	21	5
Location data	54	16	26	4
Content, usage of online chatrooms, groups	51	12	22	15
Websites browsed	46	23	28	3
Searches performed	44	25	27	4
Apps and programs used	40	27	28	5
Times of internet usage	33	17	45	5
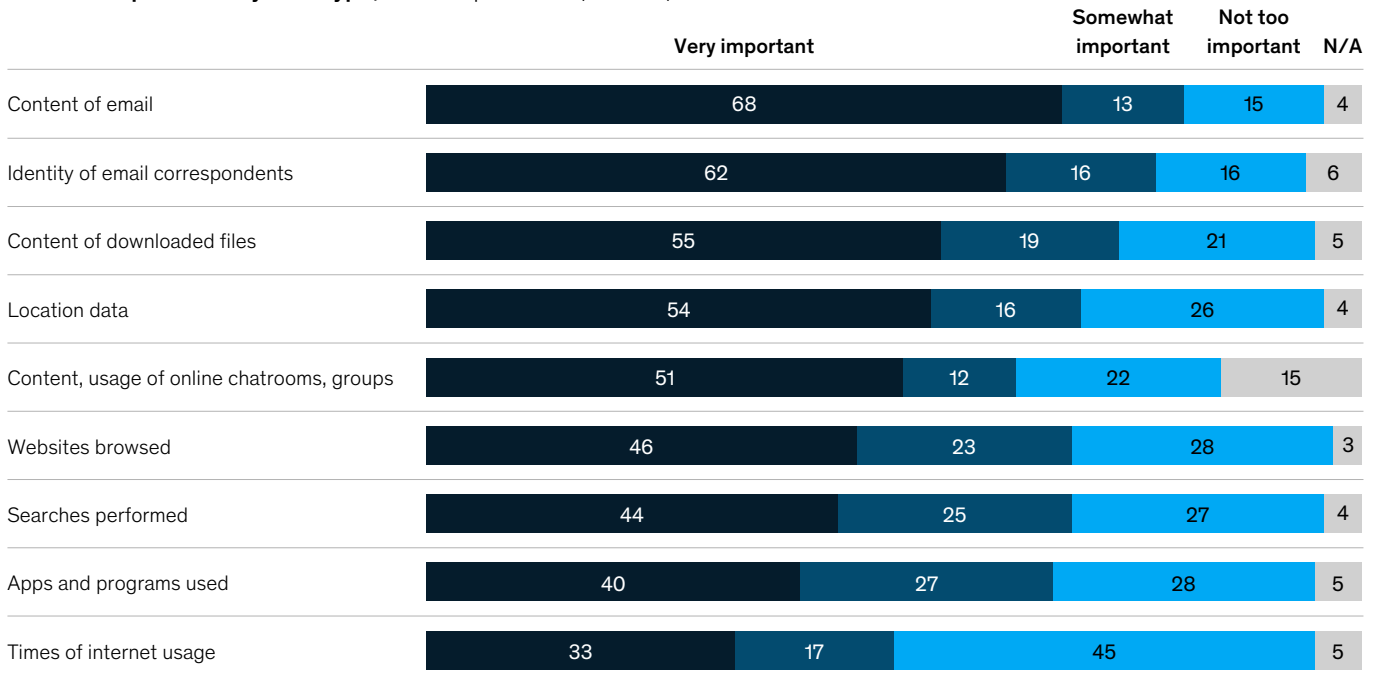
Source: Internet & American Life Project, Pew Research Center

critically important to consumers, many are willing to set aside their privacy concerns.

Consumers are not willing to share data for transactions they view as less important. They may even "vote with their feet" and walk away from doing business with companies whose data-privacy practices they don't trust, don't agree with, or don't understand. In addition, while overall knowledge of consumer privacy is on the rise, many consumers still don't know how to protect themselves: for example, only 14 percent of internet users encrypt their online communications, and only a third change their passwords regularly (Exhibit 4).

Evolving regulations
Privacy regulations are evolving, with a marked shift toward protecting consumers: the GDPR, for example, implemented in Europe in May 2018, gives consumers more choices and protections about how their data are used. The GDPR gives consumers easier access to data that companies hold about them and makes it easier for them to ask companies to delete their data.

For companies, the GDPR requires meaningful changes in the way they collect, store, share, and delete data. Failure to comply could result in steep fines, potentially costing a company up to 4 percent of its global revenue. One company incurred a fine of $180 million for a data breach that included log-in and payment information for nearly 400,000 people.[1] Another was fined $57 million for failure to comply with GDPR. A side effect of this regulation is an increased awareness among consumers of their data-privacy rights and protections. About six in ten consumers in Europe now realize that rules regulate the use of their data

[1] The fine was imposed by the Information Commissions Office, the British data regulator, and is currently under regulatory process review.

Exhibit 3

Consumers trust companies that limit the use of personal data and respond quickly to hacks and breaches.

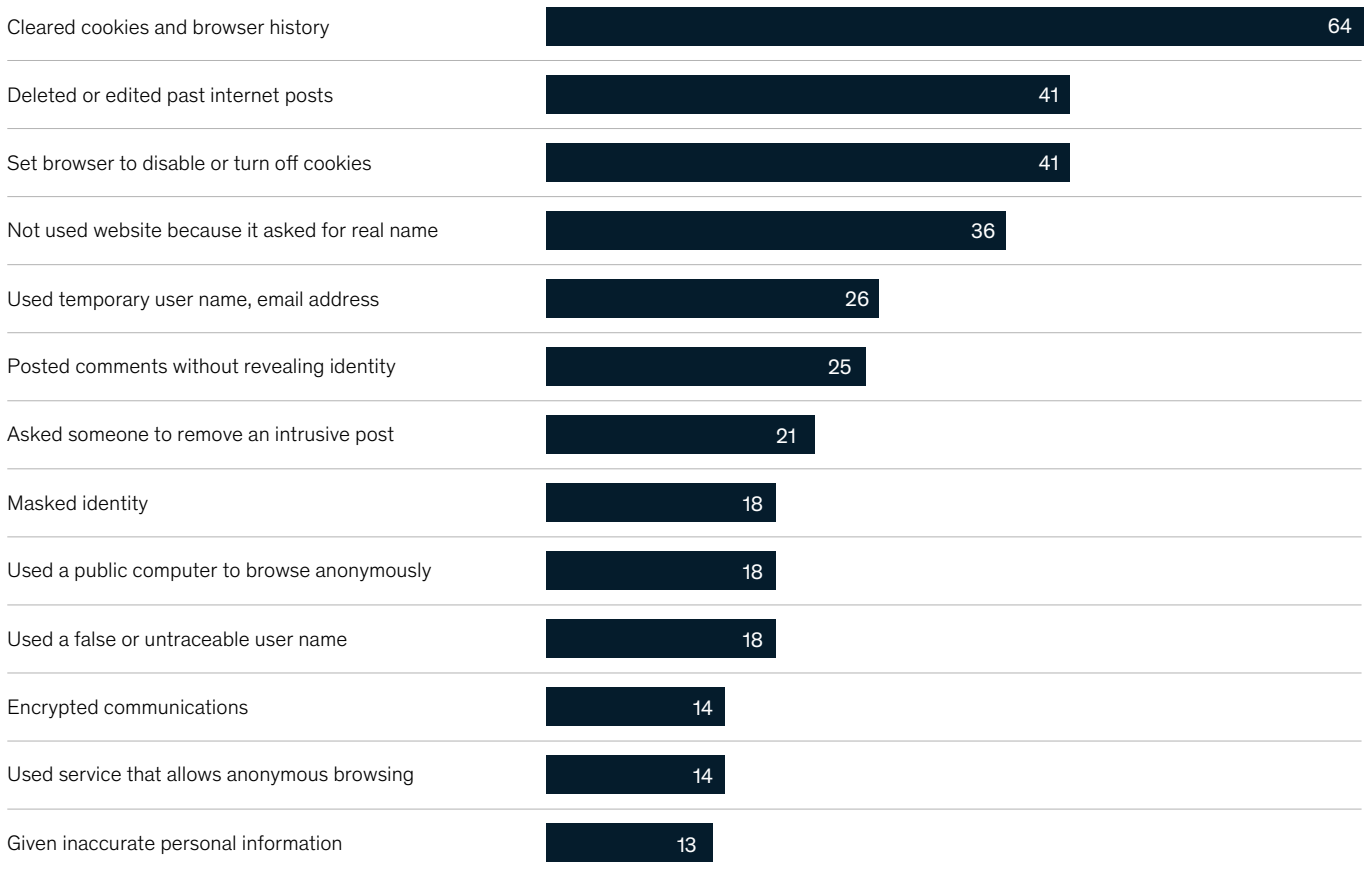**Respondent trust by practices,** % (n = 1,000)

Practice	%
Do not ask for information not relevant to their product	52
React quickly to hacks and breaches	50
Do not ask for too much personal information	48
Proactively report a hack or breach	46
Have a trustworthy brand	43
Do not collect passive data (eg, click or browsing history)	43
Have had few hacks or breaches	42
Do not use tracking cookies	41
Promote privacy for their products (eg, 2-factor authentication)	36
Have trustworthy leaders	35
Do not operate in countries with untrusted governments	32
Are considered trustworthy by family, friends	32
Share their approach to protecting data	31
Are part of a highly regulated industry	28
Headquarted in a country with a trusted government	28
Publicize their consumer-privacy interest	20

Source: McKinsey Survey of North American Consumers on Data Privacy and Protection, 2019

Exhibit 4

Consumer concerns over data collection and privacy are mounting, but few take adequate protective precautions.

Respondents taking action, % (n = 792)

Cleared cookies and browser history	64
Deleted or edited past internet posts	41
Set browser to disable or turn off cookies	41
Not used website because it asked for real name	36
Used temporary user name, email address	26
Posted comments without revealing identity	25
Asked someone to remove an intrusive post	21
Masked identity	18
Used a public computer to browse anonymously	18
Used a false or untraceable user name	18
Encrypted communications	14
Used service that allows anonymous browsing	14
Given inaccurate personal information	13

Source: Internet & American Life Project, Pew Research Center

within their own countries, an increase from only four in ten in 2015.

The GDPR has been considered a bellwether for data-privacy regulation. Even in Europe, policy makers are seeking to enact additional consumer-privacy measures, including the ePrivacy regulation (an extension of GDPR), which focuses on privacy protection for data transmitted electronically. Its status as a regulation (rather than a directive) means that it could be enforced uniformly across EU member states. The ePrivacy regulation is likely to be enacted in 2020.

Beyond Europe
Governments outside Europe have also begun to enact data-privacy regulations. In Brazil, for example, the Lei Geral de Proteção de Dados, or LGPD (General Data Protection Law) will go into effect in August 2020. Brazil's previous data-protection regulations were sector based. The LGPD is an overarching, nationwide law centralizing and codifying rules governing the collection, use, processing, and storage of personal data. While the fines are less steep than the GDPR's, they are still formidable: failing to

comply with the LGPD could cost companies up to 2 percent of their Brazilian revenues.

In the United States, the California Consumer Privacy Act (CCPA) went into effect in the state in January 2020. It gives residents the right to know which data are collected about them and to prevent the sale of their data. CCPA is a broad measure, applying to for-profit organizations that do business in California and meet one of the following criteria: earning more than half of their annual revenues from selling consumers' personal information; earning gross revenues of more than $50 million; or holding personal information on more than 100,000 consumers, households, or devices.

The CCPA is the strictest consumer-privacy regulation in the United States, which as yet has no national data-privacy law. The largest fine for mishandling data was, however, issued by the US Federal Trade Commission (FTC).

Compliance investments

Companies are investing hefty sums to ensure that they are compliant with these new regulations. In total, Fortune Global 500 companies had spent $7.8 billion by 2018 preparing for GDPR, according to an estimate by the International Association of Privacy Professionals. Companies have hired data-protection officers, a newly defined corporate position mandated by the GDPR for all companies handling large amounts of personal data. Despite these measures, few companies feel fully compliant, and many are still working on scalable solutions.

A central challenge—particularly for companies that operate internationally—is the patchwork nature of regulation. Requirements are very different from one jurisdiction or market to another. To address regulatory diversity and anticipate future regulations, many companies have begun systematizing their approach to compliance. Some have begun creating regulatory roles and responsibilities within their organizations. Many are trying to implement future-proof solutions. Rather than meeting CCPA requirements only in California, Microsoft is applying them to all US citizens, though

other states do not yet have policies as restrictive as the CCPA. This practice will probably become more common, as many companies are using the most restrictive legal requirements as their own standard. For most companies in the United States, this means following CCPA's guidelines.

Another difficult aspect of privacy regulation has to do with the deletion and porting of data: regulations allow consumers to request that their data be deleted or that enterprises provide user data to individual consumers or other services. For many companies, these tasks are technically challenging. Corporate data sets are often fragmented across varied IT infrastructure, making it difficult to recover all information on individual consumers. Some data, furthermore, may be located outside the enterprise, in affiliate or third-party networks. For these reasons, companies can struggle to identify all data from all sources for transfer or deletion.

Proactive steps for companies

Several effective actions have emerged for companies that seek to address enhanced consumer-privacy and data-protection requirements. These span the life cycle of enterprise data, and include steps in operations, infrastructure, and customer-facing practices, and are enabled by data mapping.

Data mapping

Leading companies have created data maps or registers to categorize the types of data they collect from customers. The solution is best designed to accommodate increases in the volume and range of such data that will surely come. Existing data-cataloging and data-flow-mapping tools can support the process.

Companies need to know which data they actually require to serve customers. Much of the data that is collected is not used for analytics and will not be needed in the future. Companies will mitigate risk by collecting only the data they will probably need. Another necessary step is to write or revise data-

Companies should develop clear, standardized procedures to govern requests for the removal or transfer of data.

storage and -security policies. The best approaches account for the different categories of data, which can require different storage policies.

Of further importance is the growing appetite for applied analytics. Today, leading companies need robust analytics policies. Given the proliferation of advanced machine-learning tools, many organizations will seek to analyze the high volumes of data they collect, especially by experimenting with unsupervised algorithms. But unless companies have advanced model-validation approaches and thoughtfully purposed consumer data, they should proceed with extreme caution, probably by focusing specifically on supervised-learning algorithms to minimize risk.

Operations
Leading organizations have developed identity- and access-management practices for individuals according to their roles, with security-access levels determined for different data categories. About one-third of the breaches in recent years have been attributed to insider threats. This risk can be mitigated by ensuring that data sets are accessible only to those who need them and that no one has access to all available data. Even the most robust practices for identity and access management can fail—some breaches can be caused by individuals with approved access—so additional activity monitoring can be helpful.

To act quickly when breaches do occur, organizations will want to pressure-test their crisis-response processes in advance. People who will be involved in the response must be identified and a strong communications strategy developed. One of the highest predictors of consumer trust is the speed of company reporting and response when breaches occur. Indeed, most new regulations require companies to disclose breaches very quickly; the GDPR, for example, mandates the announcement of a breach within 72 hours of its discovery.

Companies should develop clear, standardized procedures to govern requests for the removal or transfer of data. These should ensure expedited compliance with regulations and cover consumer requests for the identification, removal, and transfer of data. The processes should support data discovery in all pertinent infrastructure environments within a company and across its affiliates. Most companies today use manual processes, which creates an opportunity for streamlining and automating them to save time and resources. This approach also prepares infrastructure environments for future process developments.

Working closely with third parties, affiliates, and vendors, companies can gain an understanding of how and where their data are stored. This knowledge is especially important when third parties are supporting the development of products and features and need access to consumer data. Some companies are considering establishing review boards to support decisions about sharing data with third parties.

Infrastructure
Organizations are working to create infrastructure environments that can readily accommodate the increasing volumes of data collected, as well as attending technological innovations. Best practice is to store data in a limited number of systems,

depending on data type or classification. A smaller systems footprint reduces the chance of breaches.

Customer-facing best practices

Leading companies are building "privacy by design" into consumer-facing applications, with such features as automatic timed logouts and requirements for strong passwords. Security and privacy become default options for consumers, while features strike a balance with the user experience.

It is important for organizations to communicate transparently: customers should know when and why their data are being collected. Many companies are adding consumer privacy to their value propositions and carefully crafting the messages in their privacy policies and cookie notices to align with the overall brand.

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Our research revealed that our sample of consumers simply do not trust companies to handle their data and protect their privacy. Companies can therefore differentiate themselves by taking deliberate, positive measures in this domain. In our experience, consumers respond to companies that treat their personal data as carefully as they do themselves.

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Cybersecurity tactics for the coronavirus pandemic

The pandemic has made it harder for companies to maintain security and business continuity. But new tactics can help cybersecurity leaders to safeguard their organizations.

by Jim Boehm, James Kaplan, Marc Sorel, Nathan Sportsman, and Trevor Steen

The COVID-19 pandemic has presented chief information security officers (CISOs) and their teams with two immediate priorities. One is securing work-from-home arrangements on an unprecedented scale now that organizations have told employees to stop traveling and gathering, and government officials in many places have advised or ordered their people to stay home as much as possible. The other is maintaining the confidentiality, integrity, and availability of consumer-facing network traffic as volumes spike—partly as a result of the additional time people are spending at home.

Recent discussions with cybersecurity leaders suggest that certain actions are especially helpful to fulfill these two priorities. In this article, we set out the technology modifications, employee-engagement approaches, and process changes that cybersecurity leaders have found effective.

Securing work-from-home arrangements at scale

The rapid, widespread adoption of work-from-home tools has put considerable strain on security teams, which must safeguard these tools without making it hard or impossible for employees to work. Conversations with CISOs in Asia, Europe, and North America about how they are securing these new work-at-home arrangements highlight the changes these executives are making in three areas: technology, people, and processes.

Technology: Make sure required controls are in place
As companies roll out the technologies that enable employees to work from home and maintain business continuity, cybersecurity teams can take these actions to mitigate cybersecurity risks:

— *Accelerate patching for critical systems.* Shortening patch cycles for systems, such as virtual private networks (VPNs), end-point protection, and cloud interfaces, that are essential for remote working will help

companies eliminate vulnerabilities soon after their discovery. Patches that protect remote infrastructure deserve particular attention.

— *Scale up multifactor authentication.* Employees working remotely should be required to use multifactor authentication (MFA) to access networks and critical applications. Scaling up MFA can be challenging: the protection it will add calls for a surge in short-term capacity. Several practices make the rollout of MFA more manageable. One is to prioritize users who have elevated privileges (such as domain and sys admins, and application developers) and work with critical systems (for instance, money transfers). Targeting those users in pilot rollouts of modest scale will allow cybersecurity teams to learn from the experience and use that knowledge to shape more extensive implementation plans. Cybersecurity teams can also benefit from using MFA technologies, such as the application gateways offered by several cloud providers, that are already integrated with existing processes.

— *Install compensating controls for facility-based applications migrated to remote access.* Some applications, such as bank-teller interfaces and cell-center wikis, are available only to users working onsite at their organizations' facilities. To make such facility-based applications available to remote workers, companies must protect those apps with special controls. For example, companies might require employees to activate VPNs and use MFA to reach what would otherwise be facility-based assets while permitting them to use MFA alone when accessing other parts of the corporate environment.

— *Account for shadow IT.* At many companies, employees use so-called shadow IT systems, which they set up and administer without formal approval or support from the IT department. Extended work-from-home operations will

expose such systems because business processes that depend on shadow IT in the office will break down once employees find themselves unable to access those resources. IT and security teams should be prepared to transition, support, and protect business-critical shadow assets. They should also keep an eye out for new shadow-IT systems that employees use or create to ease working from home, to compensate for in-office capabilities they can't access, or to get around obstacles.

— *Quicken device virtualization.* Cloud-based virtualized desktop solutions can make it easier for staff to work from home because many of them can be implemented more quickly than on-premises solutions. Bear in mind that the new solutions will need strong authentication protocols—for example, a complex password, combined with a second authentication factor.

People: Help employees understand the risks
Even with stronger technology controls, employees working from home must still exercise good judgment to maintain information security. The added stress many people feel can make them more prone to social-engineering attacks. Some employees may notice that their behavior isn't monitored as it is in the office and therefore choose to engage in practices that open them to other threats, such as visiting malicious websites that office networks block. Building a "human firewall" will help ensure that employees who work from home do their part to keep the enterprise secure.

— *Communicate creatively.* A high volume of crisis-related communications can easily drown out warnings of cybersecurity risks. Security teams will need to use a mix of approaches to get their messages across. These might include setting up two-way communication channels that let users post and review questions, report incidents in real time, and share best practices; posting announcements to pop-up or universal-lock screens; and encouraging the innovative use of existing communication tools that compensate for the loss of informal

interactions in hallways, break rooms, and other office settings.

— *Focus on what to do rather than what not to do.* Telling employees not to use tools (such as consumer web services) they believe they need to do their jobs is counterproductive. Instead, security teams must explain the benefits, such as security and productivity, of using approved messaging, file-transfer, and document-management tools to do their jobs. To further encourage safe behavior, security teams can promote the use of approved devices—for example, by providing stipends to purchase approved hardware and software.

— *Increase awareness of social engineering.* COVID-19–themed phishing, vishing (voice phishing), and smishing (text phishing) campaigns have surged. Security teams must prepare employees to avoid being tricked. These teams should not only notify users that attackers will exploit their fear, stress, and uncertainty but also consider shifting to crisis-specific testing themes for phishing, vishing, and smishing campaigns.

— *Identify and monitor high-risk user groups.* Some users, such as those working with personally identifiable information or other confidential data, pose more risk than others. High-risk users should be identified and monitored for behavior (such as unusual bandwidth patterns or bulk downloads of enterprise data) that can indicate security breaches.

Processes: Promote resilience
Few business processes are designed to support extensive work from home, so most lack the right embedded controls. For example, an employee who has never done high-risk remote work and hasn't set up a VPN might find it impossible to do so because of the in-person VPN-initiation requirements. In such cases, complementary security-control processes can mitigate risks. Such security processes include these:

Even with stronger technology controls, employees working from home must still exercise good judgment to maintain information security.

— *Supporting secure remote-working tools.* Security and IT help desks should add capacity while exceptionally large numbers of employees are installing and setting up basic security tools, such as VPNs and MFA. It might be practical to deploy security-team members temporarily at call centers to provide added frontline support.

— *Testing and adjusting IR and BC/DR capabilities.* Even with increased traffic, validating remote communications and collaboration tools allows companies to support incident-response (IR) and business-continuity (BC)/disaster-recovery (DR) plans. But companies might have to adjust their plans to cover scenarios relevant to the current crisis. To find weak points in your plans, conduct a short IR or BC/DR tabletop exercise with no one in the office.

— *Securing physical documents.* In the office, employees often have ready access to digital document-sharing mechanisms, as well as shredders and secure disposal bins for printed materials. At home, where employees might lack the same resources, sensitive information can end up in the trash. Set norms for the retention and destruction of physical copies, even if that means waiting until the organization resumes business as usual.

— *Expand monitoring.* Widening the scope of organization-wide monitoring activities, particularly for data and end points, is important for two reasons. First, cyberattacks have proliferated. Second, basic boundary-protection mechanisms, such as proxies, web gateways, or network intrusion-detection systems (IDS) or intrusion-prevention systems (IPS), won't secure users working from home, off the enterprise network, and not connected to a VPN. Depending on the security stack, organizations that do not require the use of a VPN or require it only to access a limited set of resources may go largely unprotected. To expand monitoring, security teams should update security-information-and-event-management (SIEM) systems with new rule sets and discovered hashes for novel malware. They should also increase staffing in the security operations center (SOC) to help compensate for the loss of network-based security capabilities, such as end-point protections of noncompany assets. If network-based security capabilities are found to be degraded, teams should expand their IR and BC/DR plans accordingly.

— *Clarify incident-response protocols.* When cybersecurity incidents take place, SOC teams must know how to report them. Cybersecurity leaders should build redundancy options into response protocols so that responses don't stall if decision makers can't be reached or normal escalation pathways are interrupted because people are working from home.

— *Confirm the security of third parties.* Nearly every organization uses contractors and off-site vendors, and most integrate IT systems and share data with both contract and noncontract third parties, such as tax or law-enforcement authorities. When organizations assess which controls must be extended to employees to secure new work-from-home protocols, they should do the same for third-party users and connections, who are likely to be managing similar shifts in their operations and security protocols. For example, ask providers whether they have conducted any remote IR or BC/DR tabletop drills and, if they have, ask them to share the results. Should any third parties fail to demonstrate adequate security controls and procedures, consider limiting or even suspending their connectivity until they remediate their weaknesses.

— *Sustain good procurement practices.* Fast-track procurement intended to close key security gaps related to work-from-home arrangements should follow standard due-diligence processes. The need for certain security and IT tools may seem urgent, but poor vendor selection or hasty deployment could do more harm than good.

Supporting high levels of consumer-facing network traffic

Levels of online activity that challenge the confidentiality, integrity, and availability (CIA) of network traffic are accelerating. Whether your organization provides connectivity, serves consumers, or supports transactions, securing the CIA of network activity should be a top priority for any executive team that wants to protect consumers from cyberbreaches during this period of heightened vulnerability. Much as organizations are stepping up internal protections for enterprise networks, security teams in organizations that manage consumer-facing networks and the associated technologies will need to scale up their technological capabilities and amend processes quickly.

Technology: Ensure sufficient capacity
Companies that make it possible for employees to work from home must enable higher online network-traffic and transaction volumes by putting in place technical building blocks such as a web-application firewall, secure-sockets-layer (SSL) certification, network monitoring, antidistributed denial of service, and fraud analytics. As web-facing traffic grows, organizations should take additional actions to minimize cyberrisks:

— *Enhance web-facing threat-intelligence monitoring.* To anticipate threats and take preventive measures, security teams must understand how heightened consumer traffic changes the threat environment for web-facing enterprise activities. For example, to find out if attackers are becoming more interested in an organization's web-facing technologies, organizations can conduct increased passive domain-name scans to test for new malicious signatures tailored to the enterprise domain or for the number of adversarial scans targeting the enterprise network, among other threats.

— *Improve capacity management.* Overextended web-facing technologies are harder to monitor and more susceptible to attacks. Security teams can monitor the performance of applications to identify suspected malware or low-value security agents or even recommend the removal of features (such as noncritical functions or graphics on customer portals) that hog network capacity.

Processes: Integrate and standardize security activities
Customers, employees, and vendors all play some part in maintaining the confidentiality, integrity, and availability of web-facing networks. Several steps can help organizations to ensure that the activities of these stakeholders are consistent and well integrated:

— *Integrate fraud-prevention capabilities with the SOC.* Organizations that support the execution of financial transactions should consider integrating their existing fraud analytics with

SOC workflows to accelerate the inspection and remediation of fraudulent transactions.

— *Account for increased costs.* Many SOC tools and managed-security-service providers base charges for monitoring on usage—for example, the volume of log records analyzed. As usage increases with expanded network traffic, organizations with usage-based fee arrangements will need to account for any corresponding increase in costs.

— *Help consumers solve CIA problems themselves.* For media providers, enabling customers to access content without interruption is essential, but increased usage levels can jeopardize availability. Companies may wish to offer guides to show users how to mitigate access problems, particularly during periods of peak use.

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Securing remote-working arrangements and sustaining the CIA of customer-facing networks are essential to ensure the continuity of operations during this disruptive time. The actions we describe in this article, while not comprehensive, have helped many organizations to overcome the security difficulties they face and maintain their standing with customers and other stakeholders.

Cybersecurity's dual mission during the coronavirus crisis

Chief information-security officers must balance two priorities to respond to the pandemic: protecting against new cyberthreats and maintaining business continuity. Four strategic principles can help.

by Jim Boehm, James Kaplan, and Nathan Sportsman

The **extraordinary efforts** of many organizations to protect workers and serve customers during the COVID-19 pandemic have also increased their exposure to cyberthreats. Large-scale adoption of work-from-home technologies, heightened activity on customer-facing networks, and greater use of online services all present fresh openings, which cyberattackers have been quick to exploit.

The overarching challenge for chief information-security officers (CISOs) and cybersecurity teams will be protecting their institutions while enabling operations to go on without interruption. For example, cybersecurity teams at companies that provide web-based services to consumers must adjust their security programs to match scaled-up operations while securing a massive shift to work-from-home tools. At the same time, CISOs must make it possible for security-team members to look after themselves and their families during a health crisis.

Addressing these diverse and sometimes competing needs at once won't be easy. But recent conversations with cybersecurity leaders suggest that some governing principles are helping them meet the challenge. This article recommends four such principles: focusing on critical operating needs, testing plans for managing security and technology risks, monitoring for new cyberthreats, and balancing protection with business continuity.

How the response to COVID-19 has increased cyberrisk

As organizations and people have curtailed travel and in-person gatherings, they have shifted a great deal of activity into the digital realm. Workers and students are staying home, using videoconferencing services, collaboration platforms, and other digital tools to do business and schoolwork. In their free time, they are going online to shop, read, chat, play, and stream. All these behaviors put immense stress on cybersecurity controls and operations. Several major vulnerabilities stand out:

— *Working from home has opened multiple vectors for cyberattacks.* A broad shift toward work-from-home arrangements has amplified long-standing cybersecurity challenges: unsecured data transmissions by people who aren't using VPN software, weak enforcement of risk-mitigating behaviors (the "human firewall"), and physical and psychological stressors that compel employees to bypass controls for the sake of getting things done. The more that homebound employees struggle to access data and systems, the more they will attempt to use risky work-arounds (exhibit). Cybersecurity teams will need to secure work-from-home systems and test and scale VPNs and incident-response tools. In addition, they may wish to revisit access-management policies so that employees can connect to critical infrastructure via personal devices or open, internet-facing channels.

— *Social-engineering ploys are on the rise.* In social-engineering gambits, attackers attempt to gain information, money, or access to protected systems by tricking legitimate users. Companies have seen more malware-laced email-phishing campaigns that borrow the identities of health, aid, and other benevolent organizations. Scammers posing as corporate help-desk teams ask workers for their security credentials using text phishing ("smishing") and voice phishing ("vishing"). Email fraudsters have tried to get executives to move money to fund vendors, operations, and virus-related-response activities.

— *Cyberattackers are using websites with weak security to deliver malware.* With the creation of new domains and websites to spread information and resources to combat the coronavirus, attackers are exploiting the weak security controls on many of these sites to spread malware via drive-by downloads. A common approach hides readily available malware (such as AZORult) inside coronavirus heat maps or early-warning applications. In one

Exhibit

Shifting to work-from-home arrangements can open multiple vectors for cyberattacks.


Changes in app-access rights

- Under existing policies, access to apps differs based on criticality and cyberrisk appetite (eg, data infiltration, data-protection loss), from less critical apps accessible from almost anywhere (eg, public network) to apps accessible through extranet, apps accessible only through VPN, and, ultimately, critical apps accessible only on site (eg, trading, treasury)

- Remote working can require organizations to widen access rights by enabling off-site access to some of the most critical apps, which can increase cyberrisk

- Some users might not have strong multifactor authentication, because their access rights are usually limited; change in access rights, combined with weak authentication, constitutes a further threat

Use of personal devices and tools

- Some employees may have been enabled to work from their own personal devices, but because these devices are not centrally controlled (for patching, network-access control, and endpoint data-protection systems), they can introduce cybersecurity vulnerabilities

- To get work done, many employees use consumer-grade tools, accounts, and devices and share data over nonsecure and noncontrolled channels
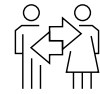
Lack of social control

- Click-through rates for phishing emails and success rates of fake call-center agents can increase if employees no longer maintain a "human protection shield" by asking coworkers about suspicious emails or calls

instance, a threat actor targeted a public-sector entity by embedding malware in a pandemic-related document and disguising it as an official communiqué from another part of the government. Once installed, such a malicious application steals a user's confidential data (for example, personal information, credit-card information, and bitcoin-wallet keys). Some malware applications launch ransomware attacks, which lock a user's system until they pay a certain amount of money to the attacker.

— *Public-sector organizations are experiencing acute pressure.* A large government entity in North America suffered from a distributed denial-of-service attack aimed at disrupting

services and issuing misinformation to the public. A major hospital in Europe was hit with a cyberattack that forced it to suspend scheduled operations, shut down its IT network, and move acute-care patients to another facility. And a department of a local government had its website encrypted by ransomware, preventing officials from posting information for the public and keeping employees from accessing certain files.

As the COVID-19 outbreak progresses and alters the functioning of our socioeconomic systems, cyberattackers will continue their efforts to exploit our fears and our digital vulnerabilities. To remain vigilant and effective, CISOs will need new approaches.

Employees on the front line will play an especially important role in keeping the organization safe as normal on-premise security measures become less relevant.

How to address the challenge: Strategic practices for chief information-security officers

While many CISOs and other executives have drawn on their experiences with past crises to respond to the early stages of the COVID-19 outbreak, the pandemic's vast scale and unpredictable duration are highly unusual. There is no playbook that CISOs can open for guidance. Nevertheless, the CISOs and senior cybersecurity managers we have spoken to have found it especially helpful to follow four practices:

— *Focus.* Security- and technology-risk teams should focus on supporting only those technology and security features, capabilities, and service rollouts that are critical to operations. Examples of focus areas that may justify a surge in capacity over the coming weeks include maintaining security operations, mitigating risks of remote access to sensitive data and software-development environments, and implementing multifactor authentication to enable employees to work from home. Organizations should also reiterate to employees their safe remote-working protocols and their procedures for threat identification and escalation. Employees on the front line will play an especially important role in keeping the organization safe as normal on-premise security measures become less relevant.

— *Test.* If your organization has security- or technology-risk plans of any kind—such as plans for incident response, business continuity, disaster recovery, talent succession, and vendor succession—then test them right away. If your organization doesn't have adequate plans in place, create them and then test them. You must determine whether your organization's risk-response approach is effective and efficient. Eliminating risk events is impossible, but you can reduce the exacerbated risk associated with a poor response.

— *Monitor.* Consider mustering all available resources to help with monitoring, which enables risk response and recovery to begin. Areas for stepped-up monitoring can include remote monitoring of collaboration tools, monitoring networks for new and novel strains of malware, and monitoring employees and endpoints to catch data-related incidents before they result in operational risk.

— *Balance.* Cybersecurity teams are likely to receive a flood of urgent requests for cybersecurity-policy exceptions that will allow teams elsewhere in the organization to get work done (for example, to approve the installation of new apps and allow the use of USB drives). While CISOs might be inclined to deny such requests for the sake of preventing undue risk,

they must also bear in mind the importance of maintaining business continuity during a fluid and challenging time for their colleagues. To support continued operations, CISOs may need to tolerate slightly higher risk in the short term by granting waivers or temporarily relaxing some controls. An accommodating approach will encourage colleagues to make intelligent risk trade-offs. That said, CISOs shouldn't allow these exceptions to weaken an organization's risk posture permanently. If CISOs grant waivers or relax controls, they should establish formal evaluation and review processes and implement time limits to force periodic reevaluation or limit the exceptions to particular user groups.

The COVID-19 crisis is a human challenge above all else. Everyone is juggling professional responsibilities with important personal ones. The coming weeks and months are likely to bring more uncertainty. By adhering to the practices we described—focus, test, monitor, and balance—CISOs can fulfill their responsibilities to uphold their institutions' security and maintain business continuity while also meeting their obligations to their teams.

Jim Boehm is a partner in McKinsey's Washington, DC, office; **James Kaplan** is a partner in the New York office; and **Nathan Sportsman** is the founder and CEO of Praetorian.

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