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1 OF 4

Data & Digital Transformation

*Using Data & Analytics to Recover from
the Pandemic*



Data & Digital Transformation

Using Data & Analytics to Recover from the Pandemic

More than ever, the ability to manage vast amounts of data will be critical to a company's continued success and its ability to succeed in a digital world. But many companies are still woefully behind the curve. Data sets live in silos, the company's technology isn't up to date, employees lack the analytical skills they need, and data breaches are common. Companies need to know how to use data to develop custom approaches for meeting client needs, hiring the right talent, measuring performance, and communicating a brand's promise. This Insight Center will cover new thinking in how to adopt and analyze data and put it to good use as part of their digital transformation. It will recap what we know about analytics best practices, and explore how the best practitioners are actually using data in their day-to-day operations.

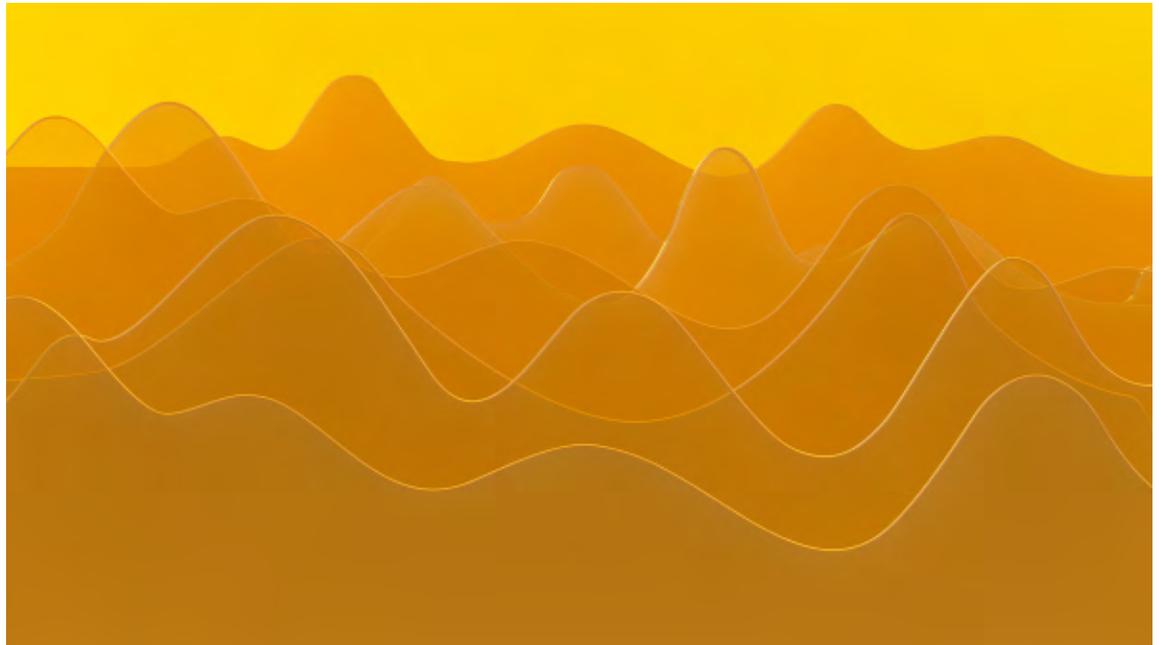
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DATA

The Key to Building a Successful Remote Organization? Data.

by Mike Walsh

MAY 18, 2020



ANDRIY ONUFRIYENKO/GETTY IMAGES

The Covid-19 crisis forced many businesses to suddenly adapt to having an entirely remote workforce. And once we all got past the novel challenges of family interruptions, #funnycatvideos, and virtual etiquette, a more complex problem raised its head: *How do you work together when you are, in fact, alone?*

For a virtual organization to function, geographically dispersed teams need the ability to communicate effectively. But that’s only half the story. Decision-making has to be delegated and decentralized as well – and that means using data to shake up your culture.

Centralized offices have one big advantage: you can get everyone in a room until they solve a problem. But when you work virtually, you have to plan every part of the decision-making process, especially when it is asynchronous. Small things that we take for granted in physical meetings – such as body language, non-verbal agreement, and interpersonal connections – [require a different kind of attention](#) when you work remotely. That, however, may be an advantage.

Consider a company that was “born digital,” like workflow automation company [Zapier](#), which was designed to operate with virtual teams from the outset. The coronavirus crisis didn’t force the company to manage a complex transformation in work style. For them, [there is no such thing as “remote work” – only work.](#)

I spoke with Wade Foster, CEO of Zapier, who is adamant that the discipline that comes with distributed decision-making can bring out the best in us. In his view, when it comes to managing people and outcomes, traditional organizations let leaders get away with too much: “In traditional organizations, leaders can manage by presence – you can see your folks, and you can see work getting done,” he says. “But when you can’t see your team, when you’re not sure what’s happening, or you literally don’t know if they’re at work or not – you have to redesign how you manage your workforce from the ground up. That forces you to be a better leader and a better manager.”

For many traditional organizations, sending teams home was a direct response to emergency “stay at home” orders – not an organizational design choice. When your entire head office decamps to “WFH,” the hardest part to manage is not the technology or connectivity, but the culture shock.

Didier Elzinga, CEO of [Culture Amp](#), a software firm that helps organizations track employee engagement and performance, believes that the shift to remote work will have profound implications for the organizational culture of big companies, especially when it comes to giving distributed teams autonomy to make their own decisions.

Leaders struggle to delegate when they wrongly believe that only certain people in the hierarchy can make a particular decision – someone who has earned the right to do so on account of their experience or skill. “Actually,” he says, “it is because they have the context that somebody else doesn’t have. Fortunately, data is a pathway to context.”

When the pandemic hit, the first thing Culture Amp did was to address the impact that the crisis was having on the speed of their decision-making. “We’ve created a daily situation room,” he says, “where we track everything that’s changed overnight, internal to the business, but also in the external world.”

The situation room at Culture Amp is a daily meeting with about 20 leaders where they run through a deck of the latest information related to the crisis, which is then published on an open channel on Slack. Once they gave people the data they needed to contextualize their decisions, Elzinga and his team made an exciting discovery. Leaders were more comfortable distributing authority and allowing teams to make their own informed decisions, without wasting time chasing down information and approvals. “Autonomy means getting to make your own decisions, and being trusted to make your own decisions,” argues Elzinga. “But it also means trusting others to make decisions on your behalf, too.”

When it comes to building trust, a little bit of structure goes a long way. At Zapier, distributed teams use a framework called **DACI**, which stands for *driver*, *approver*, *consulted*, and *informed*. Anyone involved in a decision will play one of four roles: a person responsible for driving the work and collecting the relevant data; an approver who gives the go-ahead; consultants who can provide expert opinions; and finally the informed, who need to know about the outcome because it impacts the work that they do. Knowing decision roles upfront speeds up team interactions and avoids ambiguities that can cause delays or friction.

Transparency is critical at both of these organizations. Major decisions at Zapier are documented in a *decision log* called Async, which is an internal tool that they built. The purpose of Async is to surface important conversations that might get lost in fast-paced Slack forums. It replaces internal email and acts as a searchable archive for anyone on the team to reference old discussions and keep up with company updates. According to Foster, Slack is where the teams at Zapier talk about work, while Async is where they share work with the rest of the team.

In this respect, distributed organizations are typically ahead of more traditional ones — where documentation can be sparse or buried in private email chains. “In theory,” explains Foster, “this means we should get better at making decisions over time because everyone can benefit from the organizational decision-making muscle.”

A good decision will still be wrong if it takes too long. Mars, Incorporated, makers of treats and services for humans and pets alike, was already well advanced in their plans for digital transformation before the crisis hit. However, when I spoke to Sandeep Dadlani, the company’s Chief Digital Officer, he explained that the pandemic led Mars to embrace a new internal clock speed. Typically, big global consumer packaged goods (CPG) companies develop a rigid annual plan with their retailers that covers their products, promotions, and inventory. However, in this new world, with rapidly shifting consumer patterns and unpredictable events, rigidity no longer works. “In week one of the coronavirus crisis, getting your groceries was not a challenge,” says Dadlani. “But by week six, suddenly buying groceries online had become 15% of the American market, a number that Mars was **tracking** to reach five years from now.”

With speed now of the essence, or as they call it at Mars, “*delivering value at 100x*,” Dadlani realized that the organization needed to reduce some of the subjectivity in communications and decision-

making, and encourage their newly remote teams to frame problems in a way that led to scaled-up solutions. Dadlani told me, “Our supply chains are built of wonderful leaders who have known each other for many years, who pat each other on the back, and who know how things run because they’re in the factories. They watch the trucks, pick up the phone, and get calls from the retailers. They nudge their other friends and workers to push another batch out or to get another production line changed.” But, as the crisis accelerated, Dadlani noticed a behavioral shift. Now that the logistics and technology teams have lost their in-location perspective of the supply chain and can only access raw data about inventory, supplies, materials, and packaging, their interactions have changed. Conversations between remote team members have become more focused and less subjective, productivity has improved, decisions have become more data-driven, and new, more probing questions are being asked: “*Why is inventory at this level? Can the raw materials in these factories be moved elsewhere? Can we drive a higher throughput?*” It was, in other words, what the digital transformation team had been trying to achieve for some time.

“Organizations like ours have to pivot to identify trends, pick the right business models, fail a few times, and then succeed,” he says. “At Mars, we call it the *Digital Engine*: find the problem, solve the problem, and then scale the solution as fast as we can.”

Notwithstanding the importance of agility and response time, as companies and teams become more digital, there is a corresponding need for leaders to be able to grasp the nuances and risks of data-driven thinking. At Culture Amp, Elzinga coaches his clients and employees on recognizing the limits of AI and other statistical models — especially when it comes to predicting human behavior, or making sensitive hiring and firing decisions. “The challenge for us as an industry and for HR in general,” he says, “is that we have to work not just on finding the answers, but also on data literacy.”

Data literacy is a hard-won skill. It does not come easily, even to a generation fluent with apps, emojis, and hashtags. To get there, organizations need to invest in dedicated training and education. At Mars, Dadlani was shocked when an email intended for his technology team inviting them to a course on machine learning accidentally went out to thousands of employees at the firm, and — much to his surprise — many of those unintended recipients showed up, which changed his thinking about how ready everyone in the organization was to take on the challenges of new technology.

Foster has actively encouraged data literacy programs at Zapier, offering employees a five-part mini-course called *The Golden Path to Data*, which provides training on using data tools, creating queries, and interpreting results. As a further incentive to upgrade skills, requests to the data team are prioritized for people who have actually done the course.

Foster says, “You don’t need everyone to be an expert, but the real benefit starts to happen when every team has a data power user in it, which can help the team respond to new questions and challenges faster. And that increases the decision-making velocity that’s happening inside the organization.”

Data will never be a substitute for genuine social interactions or company culture, but as we build more global, distributed, and virtual organizations, what it offers is something just as important: *a common language for transformation.*

Mike Walsh is the author of [The Algorithmic Leader: How to Be Smart When Machines Are Smarter Than You](#). Walsh is the CEO of [Tomorrow](#), a global consultancy on designing companies for the 21st century.

HEALTH

How the Pandemic Is Pushing Blockchain Forward

by Remko van Hoek and Mary Lacity

APRIL 27, 2020

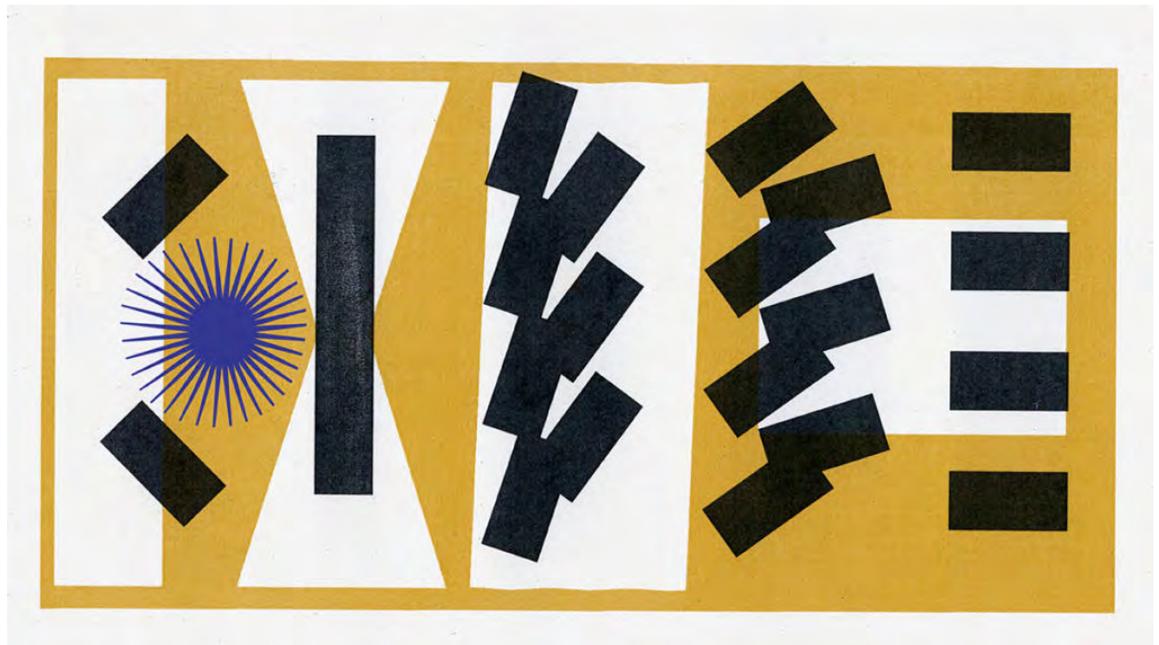


ILLUSTRATION BY MIKE LEMANSKI

Because blockchain technologies are uniquely suited to verifying, securing and sharing data, they're ideal for managing multi-party, inter-organizational, and cross-border transactions. Over the past five years, enterprises across the globe have vetted the technology with thousands of proofs of concept, but live deployments have been slow to come because partners using blockchain as a shared ledger have to agree on IP rights, governance, and business models. Government regulations have also impeded its widespread use.

It has taken the Covid-19 pandemic to push through the obstacles to blockchain adoption. The virus has revealed the weaknesses in our supply chains, our inability to deploy resources where they are most needed to address the pandemic, and difficulties in capturing and sharing the data needed to make rapid decisions in managing it. Blockchain solutions that have been under development for years have been repurposed and unleashed to address these challenges.

Consider the work of Colonel James Allen Regenor, USAF (ret). Since 2013, he's been building a blockchain-powered platform for buying and selling traceable 3-D printed parts and printing instructions for them as well as traditionally manufactured parts that are scanned and assigned unique tracking identifiers. He first led the project at Moog, which designs and manufactures advanced motion controls for aerospace and medical uses, and then he founded VeriTX in 2019 to bring the platform to market. Regenor built the platform to enable a decentralized manufacturing process in which customers can order and print parts, for example for medical devices, for use where and when they need them. The blockchain ensures tamper-proof design and printing instructions.

When Regenor realized that his platform could help with the medical devices needed to battle Covid-19, he leapt into action. He founded a new company, [Rapid Medical Parts](#), in March 2020. He rallied a global network of partners, and in just 12 days the Pentagon awarded his company a contract for converting the abundant supply of sleep apnea machines into ventilators. The conversion requires additional parts that Rapid Medical Parts will print, and at a tenth of the cost of a new ventilator. The units should be in hospitals by mid-May.

It's not just the nimble startups that are leveraging blockchain solutions to fight the virus. Organizations including the World Health Organization, IBM, Oracle, Microsoft, and other tech companies, government agencies, and international health organizations are partnering in building the blockchain-based open data hub called [MiPasa](#). The platform, created by the enterprise blockchain firm [HACERA](#), aims to quickly and precisely detect Covid-19 carriers and infection hotspots around the world. MiPasa will securely share information among individuals, hospitals, and authorities that will aid in public health analysis.

The system creates digital identifiers that cannot be linked back to the data source and that prevent the dissemination of personally identifiable information. MiPasa validates the data by reconciling disparate data sources, such as figures from WHO, the Centers for Disease Control and Prevention and others and ensuring that new data matches the original. As IBM explains in its [Blockchain Blog](#), "MiPasa is designed to...synthesize data sources, address their inconsistencies, help identify errors or misreporting and seamlessly integrate credible new feeds." By allowing global health organizations and companies to securely collaborate and share information while assuring robust privacy protection, MiPasa should become an important tool in helping to control the epidemic. Says MiPasa co-founder and HACERA CEO Jonathan Levi, "We have a huge community of organizations supporting and helping — instead of resistance at every step of the decision making process we are getting uplifted and pushed forward every step of the way."

Tech startup [Tymlez](#) is partnering with the Dutch government in a technology consortium, using its network modelling technology to map and analyze the medical supply chain. This provides the basis for a blockchain-enabled decentralized marketplace. “Creating the transparency about time-sensitive and critical supplies such as PPE and ventilators reduces the risk of price hoarding, quality issues and even fraud in the network” says Tymlez CTO Jaap Gordijn. Adds Fadime Kaya, the company’s Senior Blockchain Ecosystem Architect, “If everybody in the network has the same information about product and product availability, if there is a single version of the truth, available to all actors in the network, we can enable critical product distribution to where the need is greatest.”

The Honduran government and another startup are also rolling out a health care blockchain solution designed with data privacy in mind. According to [Coindesk](#), the app Civitas lets medical professionals share confidential data that enables patients to travel to care facilities despite the stay at home orders. Civitas allows police to verify if the patient has travel rights, even if they don’t have access to patient’s medical record, and it allows the government to develop more accurate and real time data about the distribution of infection.

As might be expected, China is a leader in leveraging blockchain in the fight against Covid-19. According to [Cointelegraph](#), 20 blockchain applications were launched to address Covid-19 over the course just two weeks in February, including an online screening system that securely manages health records and a platform that supports the management, allocation, and donation of relief supplies. Another new blockchain-based technology, reported in [Barron’s](#), uses disposable bracelets to enforce quarantine programs for foreign visitors entering Hong Kong.

To use blockchains — and other technologies — to help build a better future, leaders must protect data privacy and be transparent about data usage. Too often, crises can prompt widespread erosion of individual freedoms. Lest one forget, after 9/11, the U.S. passed the Patriot Act to fight terrorism, but that greater aim came at a cost to our individual liberties. The power of blockchain is the ability to share data without revealing personal information, if they are designed to do that. As we fight this pandemic, we urge leaders to follow the examples of Rapid Medical Parts, MiPasa, Tymlex, and Civitas: design blockchain solutions that capture and secure the data our decision makers need without eroding our democratic values.

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ANALYTICS

Bringing an Analytics Mindset to the Pandemic

by Nico Neumann
APRIL 23, 2020



HBR STAFF/MICROZOA/ANDRIY ONUFRIYENKO/GETTY IMAGES

Spend just 10 minutes on Twitter to catch up with Covid-19 news, and you'll run into updated numbers and loud (sometimes angry) arguments about what all the data we're collecting means. It's proving difficult to pin down how infectious the virus is, what its mortality rate is, how effective different mitigation efforts are, and why different regions are seeing such different patterns of infection, mortality, and recurrence.

That lack of certainty is not at all surprising; after all, it's a new disease that we're learning about in real time, under horribly high-pressure conditions. Moreover, different regions have vastly different

testing capacity and healthcare systems — those factors alone can explain much of the variability we’re witnessing.

That said, epidemiologists and other experts are running into many of the same issues that come up in any data-analytics problem. The truth is that collecting and analyzing data is rarely straightforward; at every stage, you need to make difficult judgment calls. The decisions you make about three factors — whom to include in your data set, how much relative weight to give different factors when you investigate causal chains, and how to report the results — will have a significant impact on your findings. Making the right calls will save lives in the current healthcare crisis, and improve performance in less drastic business settings.

Who should be tested?

In the case of an unknown disease, it is easiest to test only very sick people or even those who have already passed away. (In areas without enough testing kits, there may not be any choice in the matter.) Unfortunately, while this approach is easiest, it increases the perceived mortality rate. Let’s say 10 people are very sick and 1 would fall victim to a disease. Then we would record a 10% mortality rate. But if 100 people were actually infected, and 90 of them had mild symptoms (or no symptoms at all), then the actual mortality rate would be 1% — but you wouldn’t know that unless you tested more widely. The lesson: only looking at the most obvious cases makes the virus look worse than it is. Statisticians call this issue a selection bias in sampling.

Companies can easily make the same mistake. For example, let’s say an organization wants to know what’s behind an uptick in sales. The marketing manager hypothesizes that it was due to a new ad campaign. It’s tempting in this case to focus on outcomes that are easy to measure, in the name of efficiency. Let’s say we look at all the new customers arriving at our store or website and find out that half of them saw our advertising before buying from us. We may now conclude that the conversion rate of our advertising is 50%.

However, what about all the people who saw the advertising and *didn’t* come to our store or website? If we included those, the customer conversion rate would be much lower. We didn’t select those people as test candidates for our analysis, because it was more expensive and more difficult to include them. The wrong conversion rate has big implications for budget allocations and ultimately for return on investment — just as understanding both the infection and mortality rates of Covid-19 has huge implications for public-health policy going forward.

Solution: Don’t measure convenient samples; extend the study to include a more representative group. The degree to which this can happen depends on costs and available resources, of course.

How much weight should we give to different factors when we interpret the data?

The second challenge is to determine the relative impact of a factor on an outcome. Say that public-health officials are trying to understand what factors were most important to individual patients' outcomes in the current pandemic. Determining that is not simple or straightforward because there are so many possible contributing factors: age, pre-existing conditions like heart disease or diabetes, health of the immune system, timing of intervention, and whether the healthcare providers were overtaxed, to name a few. These questions are very hard to answer as the influence of many critical factors and their interactions cannot be observed or measured directly.

Businesses face similar dilemmas all the time. Let's return to our earlier example of a significant uptick in sales. The marketing manager might think it happened because of the new ad campaign she championed. But maybe it was because of recent tweaks to the website design, a pricing change, new talent on the salesforce, or because a key competitor made a bad move – or (most likely) some combination of factors. It's impossible to know for sure, after the fact.

Solution: We need a scientific method that distinguishes between and isolates the contribution of individual factors, as randomized controlled trials (experiments) do. In business settings, it's usually possible to use experiments that can test the importance of small, self-contained changes. In a pandemic, that's not going to be possible (though there are natural experiments popping up as different countries take different approaches to managing the crisis).

How to report results?

After all calculations and estimations are completed, analysts need to decide how to report their findings. How results are reported can often affect perceptions of how bad or good a situation is.

In the case of the pandemic, various stakeholders have presented infection numbers in very different ways. We saw many media outlets reporting total cases and comparing the virus growth curves to argue that certain methods work better or to criticize government policies. However, is it fair to compare 100 infection cases in the U.S. with 100 cases in Singapore? The U.S. has over 320 million people, Singapore 5.6 million. Absolute numbers should always be seen in context. Once we adjust COVID-19 cases per capita, the numbers look very different. At the same time, only showing relative increases can be misleading too. Having a 50% increase in numbers has very different implications for a country with 2 infections than it does for a country with 10,000 known cases.

Business results can be presented in a different light depending on the reporting too. Imagine you have the opportunity to invest in different companies. One reports 20% revenue growth and a second company only 10%. As with the example of infection numbers, we can see how misleading the growth rate can be if the total number of products sold isn't considered. Growing sales by 10% is much easier if you only sell 10 products rather than 10,000 per month (everything else being equal). Likewise, reporting total sales numbers alone (without a reference point) may not provide a fair comparison either.

Solution: Always provide — or request — multiple metrics, in particular absolute and relative numbers, to understand the full context of a situation. This can be “total sales increase” and “percentage increase” and year-by-year or regional comparisons.

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COSTS

In a Downturn, Include Your Employees in Cost-Cutting Decisions

by Patrick Daoust and Paul Simon

MAY 05, 2020



JUJ WINN/GETTY IMAGES

Almost every business is reorganizing its operations in response to the economic slowdown caused by the Covid-19 pandemic. Often, companies take a top-down approach to resizing based on a limited set of data such as earnings forecasts and competitive benchmarking. But following this playbook usually results in “wrong sizing” and demoralized employees.

Instead, leaders should redesign their operations based on data provided by their most valuable sources of proprietary insights — their employees. Democratizing the collection of data and recommendations allows leadership teams to gain a much clearer picture of activities and initiatives underway within their organization. It also offers a more detailed lens through which they can evaluate which activities are the most valuable to achieving strategic objectives and which ones can be automated or managed in a shared services environment — or ceased.

When leaders take this bottom-up approach, we have found they not only cut costs significantly but also realize their goals more rapidly because managers and employees are motivated to help. Changes are then also more likely to stick.

By supplementing one leadership team's top-down analysis with qualitative and quantitative data from vice presidents, directors, and employees, one fast-food restaurant chain was able to reduce its sales, general, and administration costs by more than one third and refocus on core strategic areas, such as marketing, product innovation, and new franchises. Likewise, a hospital group uncovered ways to improve clinical and administrative team interactions, making it possible to treat more patients across specialties, while reducing operating costs by more than 20%.

In both cases, leadership teams were able to transform their companies because they based decisions on more accurate information. But how can leaders be sure that they are collecting the data they need?

Below, we recommend focusing on four different types of information:

1. Key routines and projects. The first step in redesigning a company is for the leadership team to ask each head of a division or function to create a list of 20-30 routines and projects that are fundamentally important to the company. Routines are repetitive by nature and can range from daily to quarterly. Projects, such as the deployment of a new support system or the launch of a new service line, have a specified beginning and end.

Gathering this data can enable a company's leadership team to see the activities and projects underway at a more granular level, making it possible to spot gaps and redundancies quickly. For example, one company we worked with discovered several hundred of its global sales and marketing employees attended conferences to sell products in spite of low success rates. Another found salespeople repeatedly visited the same client because salesforces were not coordinated. Yet another leadership team uncovered that three times as many IT projects were underway than had been budgeted. And on and on.

2. Effort required. To help a leadership team better understand the effort required for every identified routine and project, division heads then hold workshops with their managers to discuss the volume and nature of the work involved.

Operational data supplied by employees permits leadership teams to evaluate precisely which routines require more or less support. One leadership team may discover armies of people are executing the same basic support tasks after a series of acquisitions — like IT, human resources, legal, finance, and government relations. Or, at the other end of the spectrum, more people may be needed to carry out critical responsibilities. For example, food and pharmacy retailers may have to ramp up staff to fill and deliver online orders, which have soared from five percent to nearly 40% of many companies' sales during the pandemic.

3. Strategic priorities. After this exercise, division heads should then ask managers to work with employees to tag identified routines and projects based on the strategic priorities of the company and their own division. These tags should be sorted into three categories: “core,” “context,” and “cease.”

Core routines and projects are a company's top priorities. These are capabilities that companies may want to invest in to differentiate themselves from the competition to spur future growth, like research and development in the pharmaceutical industry, design in the fashion industry, customer experience in retail, and capital expenditure management in heavy industries like transportation and manufacturing.

By contrast, context routines are standard services and activities that can be de-prioritized and optimized to be more efficient, often by sharing or automating services. For example, managers at one retailer pointed out that one team could scout the world for new fashion trends in men's shoes, women's shoes, and accessories — instead of sending a separate team for each product. One human resources department's recruiting function suggested a chat bot could handle basic questions and answers from online job applicants, freeing up employees to focus on the interview and hiring process, speeding up the pace of new hiring.

Other routines should be categorized as cease if they are adding little value or no longer relevant to a company's strategy. For example, one retailer halted the preparation and distribution of most of its management reports by the finance function. Only a few managers found them useful even though they took up most of the team's time and effort. A pharmaceutical company identified unprofitable product lines that could be retired, freeing up about 40% of the research team's time to develop new products.

4. New operating model ideas. Next, leadership teams should empower division heads to work with managers and employees to begin to redesign their operations by pinpointing which capabilities should be built up in order for the company to bounce back and grow. Managers should crowdsource not just the operational data they think they need to achieve new efficiencies, but also innovative ideas for reinventing their operations and their offerings for the future.

By including this data from employees in the process, leadership teams can then pursue more ambitious visions, since they will have both the significant savings and the talent they need to execute their plans. Retailers will be able to pivot and offer much more elaborate shopping

experiences online, complete with “magic mirrors” that let customers try on shoes or apparel virtually and touch screens that tell them which store has them in stock. Grocers and pharmacy retailers can invest in digital networks that allow them to nimbly redeploy their workforce by sending them alerts when there is an opening for someone to work in a different store, or branch, or stock room. Transportation companies can reallocate their scarce resources to developing more efficient ways to deliver packages from their warehouses to customers’ homes. And pharmaceutical companies can ensure a brighter future by developing new products and services at a faster pace, transforming innovations like new vaccines or treatments into the bread-and-butter products of tomorrow.

By tapping into data provided by managers and employees to redesign a company, leadership teams will not only be able to make better decisions – they will also be able to improve their operations, and still have workforces engaged and motivated to continuously improve them.

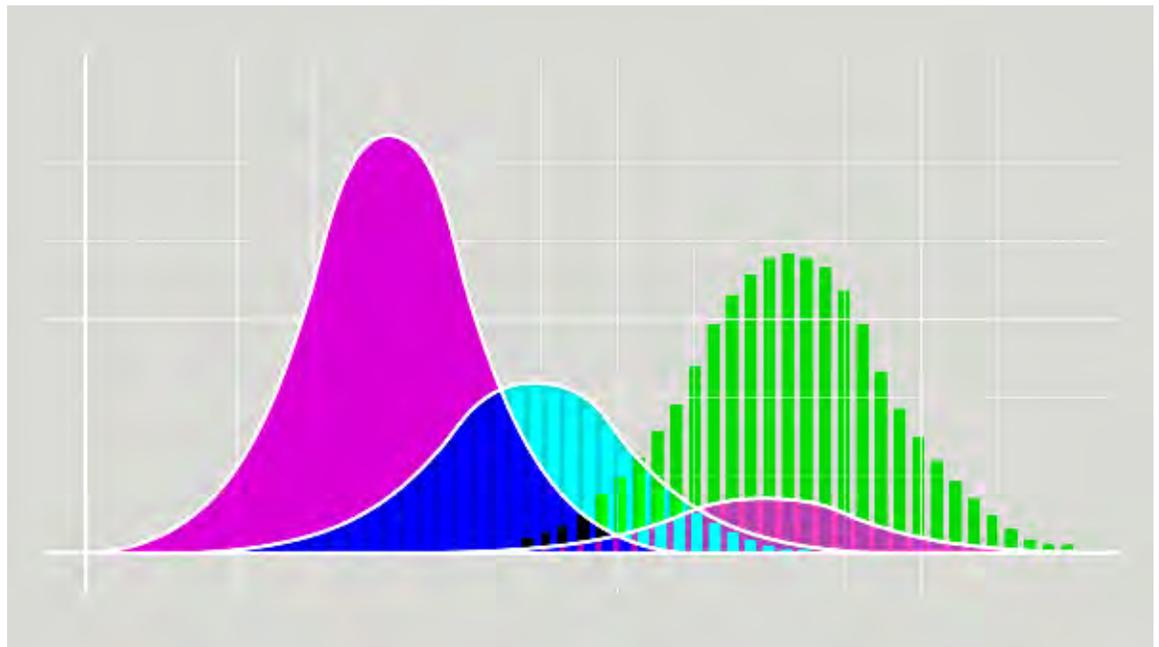
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DATA

Which Covid-19 Data Can You Trust?

by Satchit Balsari, Caroline Buckee and Tarun Khanna
MAY 08, 2020



HBR STAFF

The Covid-19 pandemic has created a tidal wave of data. As countries and cities struggle to grab hold of the scope and scale of the problem, tech corporations and data aggregators have stepped up, filling the gap with dashboards [scoring social distancing](#) based on location data from mobile phone apps and cell towers, [contact-tracing apps](#) using geolocation services and Bluetooth, and modeling efforts to predict epidemic burden and hospital needs. In the face of uncertainty, these data can provide comfort — tangible facts in the face of many unknowns.

In a crisis situation like the one we are in, data can be an essential tool for crafting responses, allocating resources, measuring the effectiveness of interventions, such as social distancing, and telling us when we might reopen economies. However, incomplete or incorrect data can also muddy the waters, obscuring important nuances within communities, ignoring important factors such as socioeconomic realities, and creating false senses of panic or safety, not to mention other harms such as needlessly exposing private information. Right now, bad data could produce serious missteps with consequences for millions.

Unfortunately, many of these technological solutions — however well intended — do not provide the clear picture they purport to. In many cases, there is insufficient engagement with subject-matter experts, such as epidemiologists who specialize in modeling the spread of infectious diseases or front-line clinicians who can help prioritize needs. But because technology and telecom companies have greater access to mobile device data, enormous financial resources, and larger teams of data scientists, than academic researchers do, their data products are being rolled out at a higher volume than high quality studies.

Whether you're a CEO, a consultant, a policymaker, or just someone who is trying to make sense of what's going on, it's essential to be able to sort the good data from the misleading — or even misguided.

Common Pitfalls

While you may not be qualified to evaluate the particulars of every dashboard, chart, and study you see, there are common red flags to let you know data might not be reliable. Here's what to look out for:

Data products that are too broad, too specific, or lack context. Over-aggregated data — such as national metrics of physical distancing that some of our largest data aggregators in the world are putting out — obscure important local and regional variation, are not actionable, and mean little if used for inter-nation comparisons given the massive social, demographic, and economic disparities in the world.

Conversely, overly disaggregated data can do outright harm. Public health practitioners and data privacy experts rely on proportionality — only use the data that you absolutely need for the intended purpose and no more. To some extent, all data risk breaching the privacy of individual or group identities, but publishing scorecards for specific neighborhoods risks shaming or punishing communities, while ignoring the socioeconomic realities of people's lives that make it difficult for them to stay home. Even more granular examples, such as footfalls at identifiable business locations, risks de-identifying religious groups; patients visiting cancer hospitals, HIV clinics, or reproductive health clinics; or those seeking public assistance. The medical and public health communities long ago deemed the un-masking of such information without consent unacceptable, but companies have recently been releasing it on publicly available dashboards.

Even data at an appropriate spatial resolution must be interpreted with caution — [context is key](#). Say you see a map that shows a 20% decrease in mobility in an American suburb and a 40% decrease in a nearby city after social distancing measures are announced. The decrease in the suburb may adequately push physical distancing to below the desired threshold, given that its residents started with a relatively low baseline to begin with. The city may still be far away from the mobility reduction required to meaningfully impact transmission rates, as its residents were very mobile before. Until we know more about how these changing movement patterns impact epidemiological aspects of the disease, we should use these data with caution. Simply presenting them, or interpreting them without a proper contextual understanding, could inadvertently lead to imposing or relaxing restrictions on lives and livelihoods, based on incomplete information.

The technologies behind the data are unvetted or have limited utility. Tech solutions such as mobile phone-based contact tracing — a solution gaining steam in many countries — [have untested potential](#), but only as part of a broader comprehensive strategy that includes a strong underlying health system. Jason Bay, the product lead of Singapore’s successful tracing app, TraceTogether, [cautions](#) that “automated contact tracing is not a coronavirus panacea.” Yet some app-based contact-tracing efforts are being used to risk-stratify people, and these estimates are being used to make decisions on quarantine, isolation, and freedom of movement, without concomitant testing.

Both producers and consumers of outputs from these apps must understand where these can fall short. They may prove to be very useful if we experience recurrent waves in the coming months, when the outbreaks may be more localized, and our testing capacity commensurate with our technological aspirations. In the absence of a tightly coupled testing and treatment plan, however, these apps risk either providing false reassurance to communities where infectious but asymptomatic individuals can continue to spread disease, or requiring an unreasonably large number of people to quarantine. The behavioral response of the population to these apps is therefore unknown and likely to vary significantly across societies.

In some cases, the data from tracing apps requires another caveat: the methods they use are not transparent, so they cannot be fully evaluated by experts. Some contact-tracing apps follow black-box algorithms, which preclude the global community of scientists from refining them or adopting them elsewhere. These non-transparent, un-validated interventions — which are now being rolled out (or [rolled back](#)) in countries such as China, India, Israel and Vietnam — are in direct contravention to the open cross-border collaboration that scientists have adopted to address the Covid-19 pandemic. Only transparent, thoroughly vetted algorithms should be considered to augment public health interventions that affect the lives of millions.

Models are produced and presented without appropriate expertise. Well-meaning technologists and highly influential consulting firms are advising governments, and consequently businesses and general populations around the world, on strategies to combat the epidemic, including by building projection and prediction models. Epidemiological models that can help predict the burden and pattern of spread of Covid-19 rely on a number of parameters that are, as yet, [wildly uncertain](#). We

still lack many of the basic facts about this disease, including how many people have symptoms, whether people who have been infected are immune to reinfection, and — crucially — how many people have been infected so far. In the absence of reliable virological testing data, we **cannot fit models accurately**, or know confidently what the future of this epidemic will look like for all these reasons, and yet numbers are being presented to governments and the public with the appearance of certainty

Take a recent example: A leading global consulting firm explained their projections for an east-coast American city, by overlaying on it what they referred to as “the Wuhan curve.” The two populations and cities could not be more different in their demography and health care infrastructure. Such oversimplifications risk inaccurate projections and the untimely diversion of critical resources from places that need them the most. Corporations have the vast resources required to rapidly translate the knowledge generated from their data and technologies to governments and communities, but are crowdsourcing expertise from within their ranks. While it can be tempting to want to move with speed, a rapid “move fast and break things” approach — the hallmark of our startup culture — is inappropriate here. Coupling this enthusiasm with the right kind of subject matter expertise may go farther.

Read Carefully and Trust Cautiously

Relying on trustworthy sources is always good advice, but now it is an absolute must. Here are some buoys to help you navigate your way to the shore, whether you are a producer or consumer of data.

Transparency: Look for how the data, technology, or recommendations are presented. The more transparent the providers are about the representativeness of their data, analytic methods, or algorithms, the more confident they are of their process, and more open to public scrutiny. These are the safest knowledge partners.

Example: Singapore’s government was entirely transparent about the code, algorithm, and logic used in its TraceTogether contact app. While launching the app, they openly published a policy brief and white paper describing the rational and working of the app, and most importantly, their protocol (“BlueTrace”) and codebase (“OpenTrace”), allowing open review.

Thoughtfulness: Look for signs of hubris. Wanton disregard of privacy, civil rights, or well-established scientific facts belie overconfidence at best, and recklessness at worst. These kinds of approaches are likely to result in the most harm. Analysts that are conservative in their recommendations, share the uncertainty associated with their interpretations, and situate their findings in the appropriate local context are likely to be more useful.

Example: Telenor, the Norwegian telco giant has led the way in responsible use of aggregated mobility data from cell phone tower records. Its data have been used, in **close collaboration** with scientists and local practitioners, to model, predict, and respond to outbreaks around the world. Telenor has openly published its methods and provided technological guidance on how telco data

can be used in public health emergencies in a responsible, anonymized format that does not risk de-identification.

Expertise: Look for the professionals. Examine the credentials of those providing and processing the data. We are facing a deluge of data and interpretation from the wrong kinds of experts, resulting in a high noise-to-signal ratio. On the most bullish of days, we wouldn't want our bankers to be our surgeons.

Example: Imperial College, among other academic groups, has been involved in guiding decision makers in the U.K. Covid-19 response since the early days of the epidemic, through the work of the [MRC Center for Global Infectious Disease Analysis](#). In the U.S., longstanding collaborations between state and local health departments and research groups have been augmented by new collaborative partnerships. In both countries, these efforts critically rely on sustained funding of centers that can support methods development and training during inter-epidemic periods and mobilized to respond when crises hit.

Open Platforms: Look for the collaborators. There are several data aggregators that are committed to supporting an ecosystem of communities, businesses, and research partners, by sharing data or code in safe and responsible ways. Such open ecosystem approaches, while not easy to manage, can yield high dividends.

Example: Where technology companies like Camber Systems, Cubeiq and Facebook have allowed scientists to examine their data, researchers can compare data across these novel data streams to account for representativeness and correct biases, making the data even more useful. [The Covid-19 Mobility Data Network](#), of which we are part, comprises a voluntary collaboration of epidemiologists from around the world analyzes aggregated data from technology companies to provide daily insights to city and state officials from California to Dhaka, Bangladesh. Governments convey what information gaps exist in their planning and policy making, the scientists help identify the best analytic approaches to address those gaps, and the technology companies make available the data they have access to in a meaningful, interpretable format. All data exchange follows strict institutional ethical guidelines and is in compliance with local and international law. Daily outputs speak to the articulated needs of the collaborating government officials.

This pandemic has been studied more intensely in a shorter amount of time than any other human event. Our globalized world has rapidly generated and shared a vast amount of information about it. It is inevitable that there will be bad as well as good data in that mix. These massive, decentralized, and crowd-sourced data can reliably be converted to life-saving knowledge if tempered by [expertise, transparency, rigor, and collaboration](#). When making your own decisions, read closely, trust carefully, and when in doubt, look to the experts.

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DATA

Use Data to Accelerate Your Business Strategy

by John Ladley and Thomas C. Redman

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JORG GREUEL/GETTY IMAGES

Thirty-five years after Robert Waterman’s observation in *In Search of Excellence* that companies were “data rich and information poor,” little has changed. For sure companies are “data richer,” having exponentially more data at their disposal. But they are still information poor, even as leaders have implemented a wide array of programs aimed at exploiting data. Most still struggle to build data into their business strategies and, conversely, to align their data efforts to the needs of the business. There are a host of reasons, from lack of talent to unreasonable expectations to culture. Solving these problems is essential for those that wish to unleash the power of data across their organizations.

It should come as no surprise that data is not yet strategic for many organizations. Business is already complex enough: When setting a company strategy, there are customers to satisfy, competitors to fend off, uncertain regulatory environments to accommodate, and skills gaps that must be closed. Plenty of great ideas — including carbon neutrality, diversity, social responsibility, new technologies, and yes, data — compete for resources and attention. Many [success stories confirm](#) data can add [enormous value](#), but it is hard to know where data fits.

How organizations actually view their data assets is all over the map. Managers use it every day, [even as they don't fully trust it](#). Many [find basic statistics confusing](#). People are rightly proud of their decision-making capabilities and see little need for better analytics or AI. They recoil at the thought of some sort of central oversight to their data, yet are stunned when a data issue creates unforeseen risk. While they know that privacy and security is important, no one has ever made their accountabilities explicit. And they realize that becoming a data-driven organization [involves adapting their culture](#), which is difficult and time-consuming. It is little wonder that data is still far from the business strategy mainstream.

The data side of the business is no less complex. There is no shortage of great opportunities and demands, from analytics and artificial intelligence to data quality, monetization, privacy, small data, and security. Still most data work is of a keep-the-lights-on variety, such as adding new fields to databases, aligning systems that don't talk, defining metadata, putting low-level governance in place, implementing business intelligence systems, wrangling data to feed machine-learning algorithms, and so on. All require business participation, but those who work with data have trouble engaging the business on these tasks, never mind strategy. When the business does ask for better data controls, data experts may lack the skills or business connections needed to drive an idea forward. The result is that data activities are too low-level, short-term, and poorly connected to business strategy.

But when integrated properly, data can accelerate many — even most — business strategies by improving the processes and empowering the people needed to execute them. Consider the example of a large medical center. The center's management team understood that better use of data must become a core healthcare practice. But its data programs had fallen short of leadership's expectations. To figure out why, the Chief Data Officer (CDO) matched each current data initiative to a list of possible scenarios where data can be used to achieve value. It became apparent that the data program was actually a collection of important, but one-off, projects. None were strategically aligned, and collectively, they were not up to the medical center's needs. Once this issue was identified, the medical center was able to combine various initiatives into strategic initiatives that were tightly focused on business strategy, and then rigorously managed.

Better results across the entire center followed shortly thereafter. Most tangibly, compliance costs and fines were reduced, saving tens of millions of dollars. Improving provider data across all clinics made physicians' jobs easier and led to better patient care. In turn, patient access improved, with increased visits for routine examinations for diabetes and colon cancer screenings, all while the center still maintained its target operating margins.

So how did this medical center see through all the complexities, find common ground, and establish priorities on which everyone could agree? At its heart, they simplified the problem by employing six data scenarios – ways that companies can derive value from data. We call these scenarios “value modes,” and they include:

1. Improved processes
2. Improved competitive position
3. New and improved products, stemming from better customer and market data
4. Informationalization, or building data into products and services
5. Improved human capabilities
6. Improved risk management

We find that both business and data leaders understand these value modes well and can use them as a lingua franca to align their respective strategies. Quite generally, value modes facilitate disciplined thinking, help narrow the focus, and drive the right conversations.

We find that value modes are also especially helpful to business leaders trying to sort out the question: How can data help me? A regional bank employed these value modes after it had lost many of its high-wealth clients. The business goal was simple enough: recover market share. It didn’t fully understand why this had happened, so it focused first on understanding the issue from the client’s perspective, looking into its products and services, as highlighted in the third value mode. Advanced analytics revealed no surprises; clients were simply unhappy that their statements weren’t correct and that their transactions were not executed in a timely fashion. In response, the CDO focused on the first value mode – improved processes – and worked to clarify which processes bore on statements and trade data.

Making the needed improvements required coordination across departments and disciplines, which he effected via quality and governance programs. The first step focused on client contact data, the second on trade data, and the third on statements data. These steps removed a major source of client dissatisfaction, and clients stopped leaving the bank. Along the way it also became clear that clients wanted better ways to monitor their portfolios, leading the CDO to make major upgrades to the client portal. In time, the numbers of high-wealth clients recovered.

Value modes also help facilitate communication between business leaders and data experts. They help data experts clarify the potential and limitations in the full range of data options, and businesspeople to see how each option adds value. And both can collaborate to identify areas where data provides the best returns for the organization. What’s more, by using value modes, data experts and leaders alike can filter out the noise and hype that gets in the way of good planning. Today, for example, many people on both sides are smitten by artificial intelligence, causing a rush to adopt the technology before any formal thought is put into strategic benefits or risks. Before leaping in, leaders should sort out the benefits they hope to attain, using value modes to guide the discussion.

Complexity and abstraction are the enemies of a good strategy. Aligning your data efforts and strategy can seem daunting but focusing on these six value modes allows leaders to fit powerful data concepts into the dynamic business picture, and vice versa. There is not silver bullet here — hard work is still the order of the day. But the resulting forward motion of business and data teams finally working together is powerful indeed.

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FROM OUR SPONSOR

Digital transformation. The phrase has been used so freely that it can be hard to know what it really means—or its implications for your business. Simply put, it's using digital technology to change how businesses operate and interact with customers.

On one side of digital transformation are the forces acting on a business: lightning-fast data, emerging technologies, fierce competition and greater customer demands. And on the other, all the things an organization must do to transform itself in an increasingly digital world.

This includes applying new and existing technology in novel ways. Rethinking organizational and cultural structures. Reshaping the customer experience. And of course, managing vast amounts of complex data. When it all comes together—people, processes and technology—you can make split-second, intelligent decisions at scale.

The introduction of digital technologies has sparked new business models and revenue streams—where progress isn't measured in months or years, but in every single decision. Emerging technologies like cloud computing, IoT and AI accelerate transformation. And foundational technologies like data management and analytics are needed to analyze massive amounts of data.

It's worth noting that despite today's technological renaissance, the role of analytics hasn't changed. Its focus has been, and will continue to be, uncovering data-driven insights. Whether your data is on-premises, in a cloud or at the edge—analytics needs to be there. Think of analytics as a compass pointing in the right direction no matter how the technology landscape moves under your feet. Analytics has changed in one respect, however: It's more of a differentiator than ever. That's why it's essential to embed it into all your operations and decisions.

Of course, whether it's AI or analytics, organizations need the right processes in place to make the most of them. This includes robust data governance, cross-departmental and cross-functional collaboration, and a clear approach to moving forward with analytics. With the right processes in place, incremental changes can create big improvements to an organization's scalability and flexibility—not to mention bottom line.

Finally, having the right people—and fostering their skills—is perhaps the most important factor of all. You need to enable analytics skills at all tiers of your organization, especially in those that have the greatest domain knowledge. This is how you build a culture that is adaptable, forward-thinking and dedicated to digital transformation.

It's never too late to create the right analytical framework and strategy. Success comes when people, processes and technologies converge to create an environment where change occurs dynamically. This is what gives life to a digital business that delivers the products, services and experiences that customers value.

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