Harvard Business Review

REPRINT R1902H
PUBLISHED IN HBR
MARCH–APRIL 2019

ARTICLE
OPERATIONS

Operational Transparency

Make your processes visible to customers and your customers visible to employees.

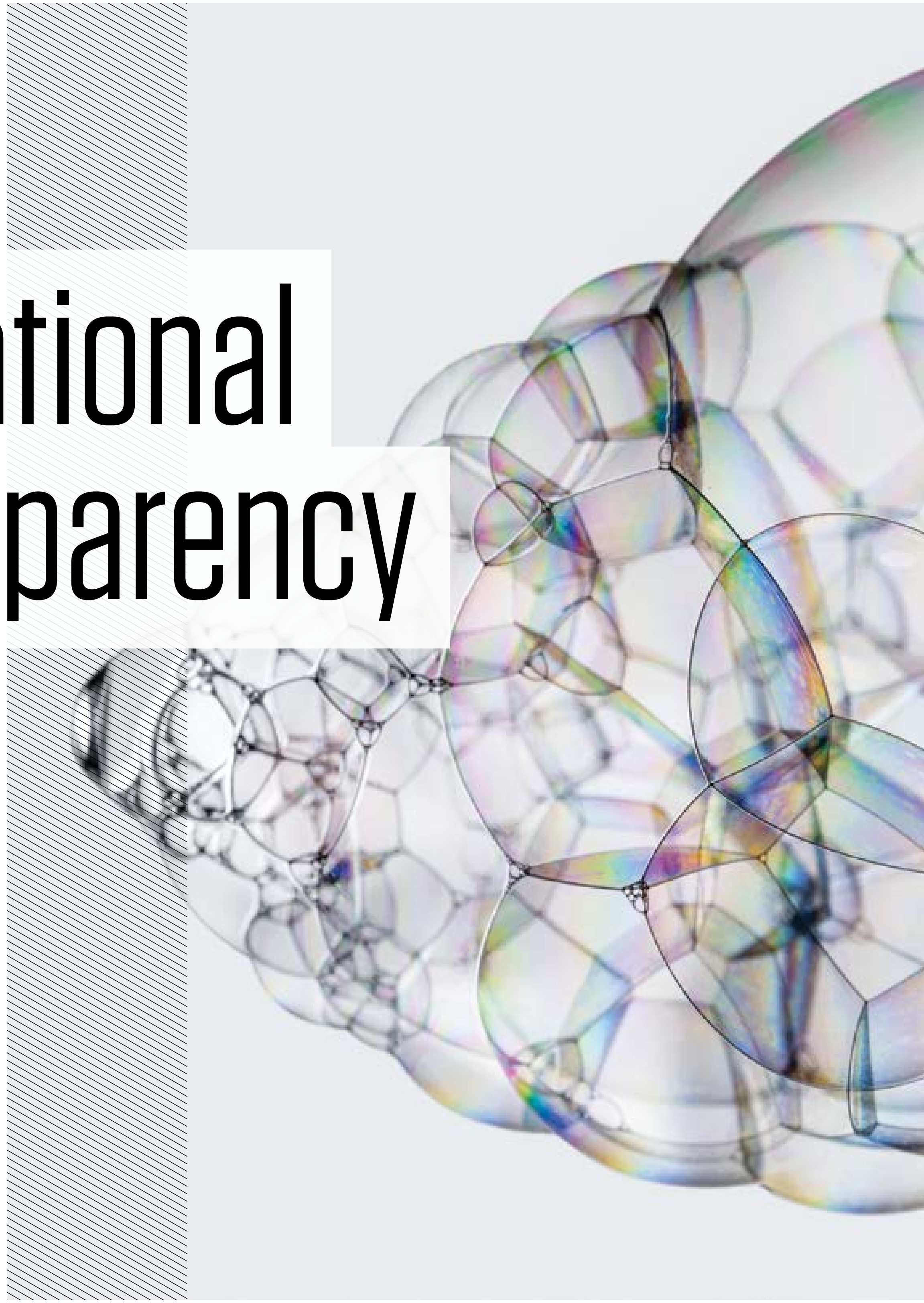
by Ryan W. Buell

OPERATIONS

Operational Transparency

Make your processes visible to customers and your customers visible to employees.

Ryan W. Buell
Professor, Harvard Business School



Photographs by **STEPHEN LEWIS**

Barclays Bank installed the world's first successful automated teller machine to much fanfare in June 1967. Having a machine distribute cash was less expensive and more efficient than having a human teller do it. What's more, customers could access the ATM at any hour—even when the bank was closed. It seemed like a win-win, and ATMs quickly spread around the world. Today people are three times more likely to withdraw money from an ATM than from a human teller.

However, there's a wrinkle to the ATM success story. When customers use ATMs more and tellers less, their overall level of satisfaction with their bank goes down. It turns out that when consumers can't see the work that's being done to serve them, their perception is that less effort went into delivering the service, so they don't appreciate or value it as much. ATMs carry out complex work: They reliably identify customers, find their account information, and then accurately complete the transaction—all while protecting the confidentiality of their private information. But separated from this work by a hard, metallic surface and a vague "processing transaction" message, customers take the "wizardry" for granted in a way that they don't when they're face-to-face with tellers who are working in their behalf.

Automation has enabled enormous efficiencies in recent years, but it has also detached customers from operations. Thanks to fleets of order-picking robots and miles of automated conveyors, it takes less than one minute of human labor to pick, pack, and ship the typical Amazon package—a miraculous ballet among people and machines that customers never glimpse. Google has more than a million servers working to deliver answers to more than a trillion queries a year—information distributed in fractions of a second without a hint of the massive operation behind it.

And even where technology hasn't erected barriers between customers and the work being performed for them, leaders have put them up. At hospitals, as many as 70% of clinical diagnoses come from the pathology lab—but the people who run those tests are often hidden away in the basement or off-site. Hundreds of people have a hand in the successful takeoff and landing of a commercial flight—but

Idea in Brief

THE DILEMMA

Conventional wisdom holds that the more contact an operation has with its customers, the less efficiently it will run. But when customers are partitioned away from the operation, they are less likely to fully understand and appreciate the work going on behind the scenes, thereby placing a lower value on the product or service being offered.

THE SOLUTION

Managers should experiment with operational transparency—the deliberate design of windows into and out of the organization's operations to help customers understand and appreciate the value being added.

THE BENEFITS

Witnessing the hidden work performed on their behalf makes customers more satisfied, more willing to pay, and more loyal. It can also make employees more satisfied by demonstrating to them that they are serving their customers well. However, managers should be aware of certain conditions in which transparency can backfire.

When customers are cordoned off from the operations of a company, they are less likely to fully understand and appreciate the value being created.

for the most part, passengers see only the cabin crew. Consider all the people who work in offices, kitchens, warehouses, and factories whose efforts create immeasurable value but who never enter customers' minds.

Therein lies a crucial managerial dilemma that I've been studying over the past decade. It has long been believed that the more contact an operation has with its customers, the less efficiently it runs. Customers are, as a researcher in the 1960s boldly called them, "environmental disturbances." As the argument goes, separating customers from internal processes through physical distance, time, or the introduction of technology enables companies to perform more efficiently and, in turn, create more value for consumers. But my research shows that the pendulum can swing too far. When customers are cordoned off from a company's operation, they are less likely to fully understand and appreciate the value being created. As a result, they are less satisfied, less willing to pay, less trusting, and less loyal to the company over time. Employees also suffer when they are cut off from the business's front lines, as they lose the motivation and enjoyment that comes from making a difference in people's lives and are denied the opportunities to learn and improve that arise from interaction with customers.

One solution that my colleagues and I have investigated is the introduction of operational transparency—the deliberate design of windows into and out of the organization's operations to help customers and employees alike understand and appreciate the value being created. To determine when and how to design such windows, managers must understand when and how customers and employees want to open up operations to scrutiny—and when both parties would prefer that work be undertaken behind the scenes.

Behind the Curtain

I first started documenting the beneficial effects of operational transparency in 2008, when I set up a mock website called Travel Finder, with my Harvard Business School colleague Michael Norton, as part of a study. We had noticed that travel agents, like bank tellers, were being made increasingly obsolete by technology—in this case, by online travel agencies. We also noticed that most online ticket sites hid the work they performed for customers behind progress bars and activity spinners, or behind marketing messages such as "Did you know you can book your hotel with us, too?" Online travel agency Kayak was an exception. The company showed customers how many different airlines it was searching while they waited, and it slotted itineraries into the results screen as they were found instead of all at once. We wondered whether this operational transparency would change the way customers viewed the service.

For our travel study, we recruited people to search for flights from Boston to Los Angeles on our website. After they entered their search information, we randomly varied how long people waited as the website searched for possible tickets. While waiting, some people saw a progress bar, and some were shown, in addition to the progress bar, the hidden work that the website was doing: "Now getting results from American Airlines...from Jet Blue...133 results found so far... Now 427..." We then surveyed people about how valuable they perceived the website to be. No matter how long people had waited, they always considered the website to be more valuable when it showed the work it was doing for them. They also reported a higher willingness to pay, a perception of higher quality, and a greater desire to use the site again. What's more, they were also considerably less sensitive to their wait time when they experienced operational transparency. People who received instantaneous service perceived the service to be as valuable as people who waited 25 seconds with a progress bar, and as valuable as people who waited 55 seconds with operational transparency. That's remarkable in an era in which we have come to expect online services to be delivered in fractions of a second.

In other experiments, people who experienced operational transparency expressed more interest in using the website again in the future, even when they compared it with a faster website that returned the same results and did not show the work. We also found that people preferred websites that showed them the work over ones that did other things to distract from the wait—like providing entertaining pictures of their destination, promotional messages about other services offered by the website, or an interactive game of tic-tac-toe. None of those types of approaches made the service seem more valuable.

Why does operational transparency seem to have this unique power? We surveyed people who have (and have not) been given a glimpse behind the curtain in services as varied as restaurants, retail, and online dating to learn how operational transparency changes their perceptions. We found that when people could see the work that was going on behind the scenes, they perceived that more effort went into the delivery of the service. They also believed that the service provider had more expertise and was being more thorough. They appreciated that effort and quality, and they in turn valued the service more.

In retail, for instance, Bhavya Mohan (of the University of San Francisco), Leslie John (of Harvard Business School), and I studied what happened when an online retailer added an infographic highlighting the costs and processes involved in manufacturing various products. For example, a wallet that sold for $115 included costs for raw materials ($14.68), construction ($38.56), duties ($4.26), and transportation ($1.00). Revealing the costs enabled the company to showcase to customers the otherwise hidden work that went into creating the wallet. In the process, of course, it also revealed that customers were paying $115.00 for something that cost $58.50 to make. The company further informed customers that its 1.9x markup compared favorably with the 6x markup charged by competing retailers—whose prices for similarly constructed items were higher. We found that sales of the wallets with operational transparency went up by 26% relative to wallets where the costs were not shared.

In subsequent experiments, we've learned that voluntarily providing operational transparency not only increases sales but also increases people's trust and satisfaction—even in settings where trust is otherwise low, such as government services. According to the Pew Research Center, 73% of Americans in 1958 reported trusting government to do the right thing at least most of the time; today a paltry 20% do. So-called sunshine laws require a minimum level of transparency by elected officials and policy makers about certain of their activities, but those laws are not meant to spotlight the often invisible work that government does on a daily basis to create value in citizens' lives—such as disposing of trash, filling potholes, cleaning up graffiti, and fixing broken streetlights.

In 2009, Boston's local government developed a smartphone app called Citizens Connect (now BOS:311), which enables residents of the city to submit public service requests. Using the app, a resident can take a photo of a problem they want to report, such as a pothole, and the picture will automatically be geotagged using the phone's GPS, and sent to the public works department. My colleagues Ethan Porter (of George Washington University), Michael Norton (of HBS), and I partnered with the City of Boston and Code for America in 2014 to study how showing the work being performed affected people's perceptions of government. We found that when people interacted with a website that showed images of the work being requested and performed, they became significantly more trusting and supportive of the government than if they interacted with a website that merely provided a tally of issues being reported and resolved. What's more, when the city took things a step further and asked employees to take photos of the work they were doing and share them with the people who submitted the original requests, users became considerably more engaged, increasing the number of requests they made on a monthly basis by 60% and reporting issues in 40% more categories. Increased citizen engagement enabled Boston's government to allocate more workers to solving problems and fewer to finding them, so more work could get done.

The thoughtful application of transparency can create value even in settings where privacy is traditionally prized, such as health care. London Business School's Kamalini Ramdas and Nazli Sonmez and I collaborated with doctors at Aravind Eye Hospital, in Pondicherry, India, to study an application of operational transparency in delivering care to patients with glaucoma—an eye disease that is the second leading cause of blindness and afflicts some 12 million Indians. Some patients in our study were given appointments with their doctors in accordance with the hospital's normal protocol. Others were given shared appointments with three or four other patients. At the shared appointments, patients were able to see what the doctor could see when examining the eyes of others and hear the questions asked by other patients. Results from our ongoing collaboration suggest that patients who have shared medical appointments are more satisfied and engaged during their

When people could see images of work being requested and performed, they became more trusting and supportive of government than when they were merely provided with a tally of issues being reported and resolved.

experience, are more likely to ask questions, learn more from the interactions, are more compliant with their prescriptions, and are more likely to return for follow-up care than patients who have traditional one-on-one appointments with their doctor.

Although companies generally strive to make services appear as effortless as possible, examples of organizations beginning to experiment with various forms of operational transparency are becoming more abundant. When customers use an ATM to withdraw money from their BBVA bank accounts in Spain, the ATM's full-color screen displays visual representations of the currency being counted, sorted, and arranged for distribution. At most Starbucks drive-through locations in the United States, the intercom has been replaced with a video monitor and camera system. When customers place an order, they come face-to-face with the barista as he or she rings up the order and marks instructions on each cup. At Domino's, customers can use the company's Pizza Tracker app to watch as the kitchen workers prep, bake, and package the pizza for delivery.

NPR and the *New York Times* podcast *The Daily* are connecting listeners and readers with the otherwise obscure work involved in researching, producing, and delivering the headlines of the day. NPR posts live feeds from its studios, and *The Daily* interviews the paper's own reporters. In Detroit, the Mayor's Office has invested in the Neighborhood Improvement Tracker, a public-facing website that shows at a lot-by-lot level the many efforts being directed toward the city's recovery, such as demolitions scheduled and completed to remove urban blight and building permits issued to enhance the community.

The evidence is clear: Operational transparency can fundamentally reshape the ways customers understand, perceive, and engage with the organizations that serve them. But what of employees?

Closing the Loop for Employees

Pioneering studies of service industries in the early 2000s found that a primary driver of satisfaction among employees is the knowledge that their company is delivering results to happy customers. Indeed, a 2007 study led by Adam Grant, an organizational psychologist and professor at Wharton, found that when call center agents soliciting donations for college scholarships actually met some of the students their work supported, their productivity and persistence skyrocketed. But what happens when the interaction between the customer and employee occurs in real time?

In 2012, Tami Kim (of the Darden School of Business), Chia-Jung Tsay (of University College London), and I ran an experiment in the Annenberg Hall dining facility at Harvard, which serves more than 3,000 meals every day. Annenberg was built in the late 1800s at a time when it was considered uncouth for diners to be able to see the work taking place in the kitchen. In that tradition, diners at Annenberg who desire eggs, a fish sandwich, a hamburger, or some other grill item cooked their way must write their order on a piece of paper and hand it to an employee, who passes it through a small window into the kitchen, where a chef reads the order, cooks the item, and places it back in the window to be taken by an employee and given to the customer. The chefs can't see the customers, and the customers can't see the chefs.

We installed iPads with video-conferencing software—one at the order station, in view of the customers, and another in the kitchen, in view of the chefs. We then timed how long it took to make various dishes and measured both chef and diner satisfaction. When we turned on the iPads in a way that allowed only the chefs to see their customers, customer satisfaction with the food rose 14%. When we turned on the iPads so the customers could see the chefs too, satisfaction went up 22%, and the chefs worked 19% faster. One chef told us, "When [the customers] can see us [make their food], they appreciate it, and I appreciate that. It makes me want to improve."

Through surveys and additional experiments, we learned that when customers saw the chefs cooking their food, they perceived that more effort went into serving them, they appreciated the effort, and they valued the service more. When the chefs could see their customers—the people who were benefiting from their efforts—the work they were doing seemed more appreciated and impactful, making them more satisfied with their jobs and more willing to exert effort. It was a virtuous cycle.

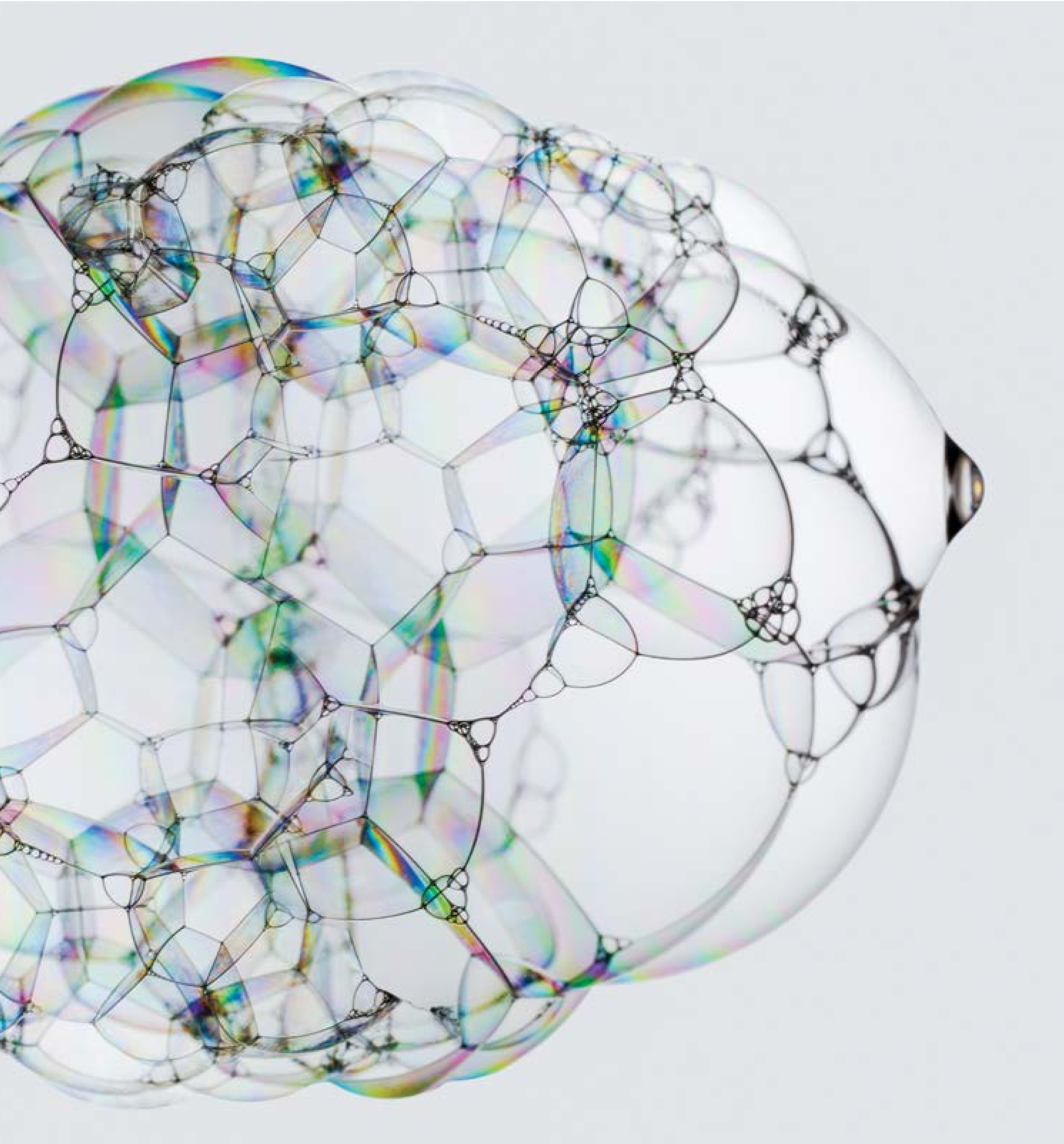
Consider another example: the Japanese train-cleaning company, Tessei, which I researched with Ethan Bernstein for an HBS case study. Tessei is charged with the Herculean

OPERATIONS

task of cleaning the Shinkansen bullet trains during their brief stops at Tokyo station—1,000 seats in seven minutes. That's the equivalent of cleaning six Boeing 737s in less than half the time it typically takes to clean one. In the early 2000s, Tessei's employees were struggling to get the job done. Part of the challenge was that the work was underappreciated: Cleaning the bullet trains was known to be dirty and difficult, and so being a cleaner at Tessei was considered shameful in Japan. Accordingly, workers did whatever they could to escape the notice of customers. In 2005, a new leader, Teruo Yabe, revitalized the service, in part by promoting operational transparency among customers and employees. After the company changed employee uniforms from an invisible pale blue (which blended in with the body of the trains) to a vibrant red, passengers began to see and appreciate the work that these crews were doing, and after more interaction was instituted between the workers and the passengers, employees felt more appreciated and found a greater sense of purpose in their work. Employees began suggesting process improvements, and customers began chipping in to help tidy up their seats. There were quantifiable performance improvements too; today a Tessei crew can clean a train in four minutes.

The India-based luxury hotel chain Oberoi Hotels takes operational transparency one step further, as I learned in my research for an HBS case study with Ananth Raman (of HBS) and Vidhya Muthuram (of the Blavatnik School of Government). Every employee in the company is preauthorized to spend up to Rs 1,500 (about US$25) to create moments of delight for guests. Whenever they learn of an opportunity to customize the service to improve a guest's experience, they're encouraged to act on it. The only stipulation is that employees must log what they have done so that the company and other employees can learn from their creativity. What has resulted is a feedback loop that fosters in employees a greater sense of purpose, helps customers feel better cared for, and improves organizational learning. Thanks in part to these efforts, Oberoi's properties routinely receive effusive reviews in customer surveys, and the company is perennially rated as one of the best luxury hotel brands in the world.

In contexts in which designing a face-to-face connection between employees and customers is impractical,



When transparency causes people to object to what they see, organizations can draw on the experience to come up with alternative approaches.

technology can be used to successfully facilitate operational transparency. In 2013, Domino's piloted a feature called Domino's Live in one of its Salt Lake City locations, installing web cameras in the kitchen. Building on its Pizza Tracker app, customers ordering pizzas in Salt Lake could log on and watch a live feed of their pizzas being made. As it turned out, tens of thousands of people from around the country logged on to watch other people's pizzas get made. Recognizing the potential, Domino's promoted Domino's Live on Facebook, and anytime someone clicked the "Like" button, a "Like Light" in the kitchen went on. This gave the pizza makers a signal that someone looking on appreciated the work they were doing. Although Domino's discontinued Domino's Live, the company added a feature to Pizza Tracker that enables customers to send notes of encouragement through the app to the people who are preparing their pizzas—prespecified messages such as "I don't know what I'd do without you" and "You are my pizza-making heroes." In a similar move, Uber recently updated its app to allow riders to close the loop with drivers—prompting them to send thank-you notes, along with tips, to the drivers after the ride is over. As one driver explained, "It makes my day to know when I've made somebody else's."

The Risk of Backfire

For all its benefits, operational transparency doesn't always deliver positive results. There are circumstances when it can repel customers and undermine employees. But even in such instances, managers should think twice before opting for complete opacity. Operational transparency should be carefully considered when:

It reveals things people genuinely don't want to see. Few may desire a behind-the-scenes look at trash collection or enjoy watching the dashcam footage of a violent police altercation. However, there's a difference between transparency that elicits the reaction "I'd rather not see that" and transparency that elicits the reaction "That should not happen." In the case of services that people aren't really interested in or find unappealing, companies should look for ways to use transparency to change the way people think about and engage with a service. For example, the city of Halifax, Nova Scotia, switched to clear trash bags in 2015 so that everyone could see what was being thrown away. Curbside waste collection fell by more than 30%, and recycling rates increased nearly 20%. When transparency causes people to object to what they see, organizations can draw on the experience to come up with alternative approaches that improve practice going forward. Dashcam footage of excessive violence by police departments has led to public outrage, but it has also improved oversight and accountability, sparked conversations that have led to policy change, and improved frontline training. "Out of sight, out of mind" may be more comfortable for everyone in the moment, but it rarely ensures the best long-term outcomes.

It engenders anxiety. Showing customers every step while their credit is being evaluated for a loan, or peering over employees' shoulders as they work, amplifies anxiety. Ethan Bernstein, of HBS, found that when curtains were put up around production lines at a Chinese cell phone manufacturer, productivity increased by 10% to 15%. Free from prying eyes, workers felt more focused and licensed to experiment with ways to improve standardized processes. What's more, workers felt safe to share ideas with one another, building team camaraderie and improving performance. When transparency makes us feel watched, it can hold us back; but when it helps us feel engaged, it can move us forward. For example, my HBS colleague Michelle Shell and I found that when customers who were transparently being evaluated for a loan were also provided with an easy way to contact a support person with questions throughout the process, the probability they would move forward with the loan, if offered, increased.

It shatters our faith in the relationship. When transparency reveals that a company isn't even-handed or that its practices violate implicit social norms, it makes customers understandably upset. Incidents of air rage—when an irate passenger causes a plane to land early—are higher on flights that have both a business class and an economy class and all passengers board from the front, forcing people in economy class to experience the disparity. This study, conducted by Katherine DeCelles (of the Rotman School of Management) and Michael Norton, found that when the plane boards in the middle, so there's less transparency, the effect goes away. Or consider the ubiquitous marketing

OPERATIONS

practice of personalizing ads. Tami Kim, along with Kate Barasz (of HBS) and Leslie John, found that when companies are transparent about targeting online ads on the basis of things we've revealed about ourselves, we appreciate the personalization. But when the transparency instead shows that they customize ads according to things they've *inferred* about us, it makes us upset. Customers also bristle when it's clear instead that companies are sharing their information with third parties without permission.

It destroys the magic. Sometimes we want to suspend our disbelief, and providing too much transparency would make that impossible. Retailers that sell high-end jewelry, musical instruments, or home decor often keep redundant inventory off the floor to give the pieces we see a special, one-of-a-kind mystique. The illusion that our ring or guitar or vase is unique enhances our experience. Likewise, even when it's 95 degrees outside, the cast member playing Mickey Mouse at Disneyland should keep the heavy, stuffy head of the costume on during the parade. Nothing can ruin the experience of make-believe like too much transparency. In other cases, we're fascinated to be in on the secret. Factory tours and "how it's made" shows are ubiquitous, and we clamor to watch bloopers and outtakes from our favorite movies. In fact, Disney offers a Backstage Magic experience for those who self-select into peeking behind the curtain.

It exposes an ineffective process. When transparency reveals employees who are incapable, indifferent, or powerless to deliver on the value proposition of the firm, customers can become incensed. Think back to the last service interaction you had where two employees were visibly chatting with each other instead of helping you. Or remember the last time your simmering frustration rose to a boil when a customer service rep repeated apologies for a problem over and over but had no means or authority to remedy the situation. Meanwhile, exposing employees to disenchanted and overtly negative customers, whom they have no hope of satisfying, can be a recipe for burnout. Agent turnover in many call centers, for example, exceeds 150% per year. Often situations like these arise when transparency hasn't been designed to be reciprocal and to engender learning. Transparency that is accompanied by mechanisms to collect and learn from customer-provided feedback can accelerate, and create opportunities to celebrate, improvement.

It reveals that a company's best efforts yield poor results. When people can see that a lot of behind-the-scenes effort went into creating an inadequate outcome, it reinforces their impression that the company is bad at what it does. In an experiment I conducted with Michael Norton, participants engaged with one of two online dating websites that gave them dissatisfying results. Participants perceived that the site that showed them how hard it was working was worse than the one that delivered the same bad result but didn't show the work. The impression was, "You tried so hard, and that's the best you could do? You must not be very good at your job." That said, when mistakes are made, timely transparency is still typically the best path. Customers may punish companies that fail to be transparent about missteps or errors, questioning the organization's motives for hiding the information. "Why did Equifax wait 40 days to inform 143 million people that their confidential information had been compromised?" customers might wonder. Or "Why did Facebook wait three years to disclose that Cambridge Analytica improperly accessed the records of 50 million users?"

It shows that the company's products or services are inferior to competitors'. A fundamental tenet of business still applies: If your customers find that your products are of poor quality, overly expensive, or otherwise less attractive than your competitors' offerings, they will do business elsewhere. Shwetha Mariadassou (of Stanford), Yanchong Zheng (of MIT), and I found that such revelations are most damaging when a company's level of performance is seen as inferior to a competitor or industry benchmark. On the other hand, transparency that exposes a customer's own poor performance—for example, when your power company reports that you consume more electricity than your neighbors—can be a potent motivator of change. The effect can be especially powerful when the company reveals unflattering changes in your performance: You increased consumption by 5%, but your neighbors decreased consumption by an average of 3%.

It highlights a lack of progress. Uncertainty about our status makes our skin crawl. That's why progress bars are ubiquitous online, and why American, Delta, and United

OPERATIONS

Airlines now update the status of people's bags throughout their journey, providing mobile alerts when bags have been scanned, loaded, off-loaded, placed in baggage claim, and so on. We like to have the feeling of moving forward, and transparency that demonstrates the opposite can be frustrating. For example, in a recent experiment, I found that when people who have been waiting for service can see that nobody has joined the queue behind them, they're significantly more likely to give up waiting than if they don't know whether anyone else has joined. Making visible their lack of progress from the end of the queue leaves them wondering whether continuing to wait is worthwhile. On the other hand, when people who have been waiting for service are able to see that their time waiting has resulted in advancement from the end of the queue, they're significantly more likely to stay in line.

It reveals that the company's operations harm workers or the environment. News coverage of the 2013 collapse of Rana Plaza, which killed and injured thousands of Bangladeshi garment workers, and the 2010 Deepwater Horizon oil spill, which released millions of barrels of oil into the Gulf of Mexico, casts spotlights on inhumane working conditions and subpar environmental standards that reshaped corporate initiatives around supply chain sustainability. Visibility into such problems can cause a strong and swift customer backlash. To that end, transparency functions as a test of sorts: If you don't want people to see how you treat your employees or the planet, you probably need to make some changes. On the other hand, when transparency reveals that companies are operating sustainably, it can have a powerful effect.

Georgia Institute of Technology's Basak Kalkanci and I ran field experiments with Alta Gracia, an apparel manufacturer that pays a living wage to its workers in the Dominican Republic, and with Counter Culture Coffee, a North Carolina–based coffee roasting company that engages in environmentally sustainable practices. We collaborated with the Looma Project to produce a short video showing footage of working conditions inside Alta Gracia's factory and featuring interviews with workers discussing the living wage that Alta Gracia pays. We produced a similar video highlighting Counter Culture Coffee's environmental sustainability practices, such as composting the chaff from its roasting process to reduce landfill waste. Showing these videos at point-of-sale kiosks increased the probability that customers would buy the company's products by roughly 20%, relative to merely showing brand videos.

It's deceptive. Transparency is helpful when it reveals work, but when the illusion of transparency is used to deceive or manipulate, it can backfire spectacularly. When customers call AT&T or Apple to request customer support, the companies' automated systems play the sound of typing between prompts to signal that work is being done. Customers understand these cues for what they are and do not mistake them for the sound of an actual person performing a task. However, companies can easily stray into dodgy territory. For example, several years ago, a company called Premier Health Plans used software to speak on behalf of telemarketing agents who had heavy accents. Calls would typically start off with the agent identifying "herself" as Samantha West and asking an initial question, prompting customers to think they were engaging with a live customer service rep. However, awkward pauses between exchanges, the software's limited repertoire of phrases, and the mechanical word-for-word repetition that resulted during interactions caused skeptical customers to interrupt, asking, "Are you a robot?" Anticipating this possibility, the developers had included the recording of a disarming laugh and the response "I am a real person. Can you hear me OK?" Customers weren't buying it. Recordings soon emerged online of people interrogating Samantha West to expose her as a fraud.

Recently, Google announced its plans to roll out a much more sophisticated phone robot, called Google Duplex, that is fully automated and can pass as a human—calling restaurants and hair salons to make reservations and appointments on behalf of its users. The technology is breathtaking, and the potential for value creation is enormous, but unless Duplex is modified to be genuinely transparent, it's hard to imagine that those it deceives will be forgiving.

Bringing Operational Transparency to Your Organization

Given all the potential advantages and pitfalls of operational transparency, managers should be thoughtful about

Transparency implementations work best when they're visual—ideally giving customers actual windows into the process so that there's no question about the credibility of what's being shown.

how they implement it. They should consider the following factors in designing their initiatives:

What to reveal? A great place to start is to think about moments in the process that could be easily showcased with minimal effort. For example, one dessert-focused restaurant introduced operational transparency by suspending a tilted mirror from the ceiling above the pastry chefs who were plating and finishing desserts. Diners, whose views had been previously obscured by high counters and a bank of espresso machines, were captivated by their new window into the action.

Other opportunities for transparency can be found by considering what information already captured in the organization's databases would be appreciated by customers. For example, several years ago, as a part of its efforts to improve access to health care, the U.S. Department of Veterans Affairs began internally tracking how long veterans were waiting at each of its facilities to get an appointment to see a doctor. Recently, the agency made this information publicly available to patients on its website. Similarly, Quick Lane Tire and Auto Center, a nationwide auto repair company has been experimenting with providing a digital information board in its waiting rooms that gives customers real-time updates about what's happening with their cars and the current status of the service queue.

When to reveal? Transparency boosts value perceptions most when it reveals work as it is happening or just after it has been completed, rather than showing work that has not yet occurred. In my research, I've found that customers are more satisfied when a travel site like Kayak shows its efforts to find a flight *as it searches* dozens of airlines than when it merely tells customers before they hit the "search" button *that it will search* dozens of airlines. In addition, consumers shouldn't be force-fed transparency. Rather, they should get to decide when they want to see more. For example, UPS receives 143 million package-tracking requests on a typical business day—which converts to an average of about seven lookups per package. These requests are made by customers who are actively curious about the status of particular packages and are tracking them at times of their choosing. Imagine if UPS instead called you at its own discretion seven times per shipment with a running progress report.

How to reveal? Transparency implementations work best when they're visual—ideally giving customers actual windows into the process so that there's no question about the credibility of what's being shown. When this isn't possible, video or animated infographics and diagrams that provide a visual representation of the work boost the perception of value more than static imagery, which in turn, outperforms text descriptions. Transparency also works best when it's voluntarily provided by companies; transparency that is wrung out of corporations as a result of regulations, investor pressure, or other factors does not build trust.

Don't forget to close the loop. Transparency is the most beneficial when it's allowed to flow in both directions—from the customers into the operation and from the employees out to the customers. Forcing employees to toil in obscurity deprives them of seeing how their work is helping customers, reducing their feeling that their work is appreciated and undermining their motivation. What's more, transparency for employees can give them the information they need to customize service and help them learn better ways of operating.

IN A SENSE, today's businesses have become victims of the global economy's immense productivity gains over the past two centuries. Consumers today rely on a dizzying array of products that are manufactured and distributed from all around the world and on services that are delivered with an intensifying frequency. But the apparently effortless abundance and convenience also make it easy for consumers to take work for granted and for employees to lose out on the learning and motivation that customer connections afford. With that in mind, businesses should stop reflexively hiding their operations for the sake of efficiency and instead thoughtfully consider when and how to open them up to create more value for customers and employees alike.

HBR Reprint R1902H

RYAN W. BUELL *is the UPS Foundation Associate Professor of Service Management at Harvard Business School. (Disclosure: He has given paid lectures at Google and Uber in the past.)*