



SURVEY REPORT

State of the Technical Professional Workforce

In partnership with:



About the Survey

The survey was conducted online by Supply & Demand Chain Executive, a leading industry magazine. You can find out more about SDCE at www.sdcexec.com.

SDCE conducted the survey over the course of several weeks in November and December 2015. They targeted two audiences, including their traditional supply chain audience. But they also sought feedback from the engineering and technical professional community. In all, they had just over 500 people who self-identified as engineers or other technical professionals respond to the survey—a very sizeable sample that gave us some great insights. The results in this report reflect exclusively those 506 people who identified as working in engineering, research, science or otherwise in the technical space.

Company Demographics

The respondents represented a good mix across different geographies and industries, and distribution across small organizations and large enterprise companies.

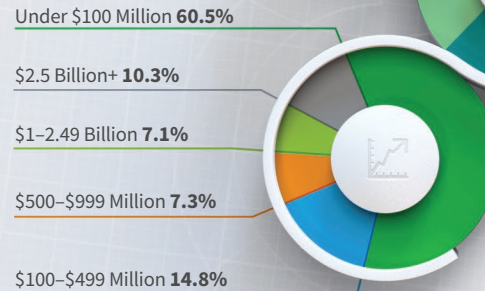
Respondents' Demographics

In terms of titles, the respondents included a good mix of individual contributors, team leaders and managers, as well as senior executives. The results reflect views from a variety of different levels across the enterprise.

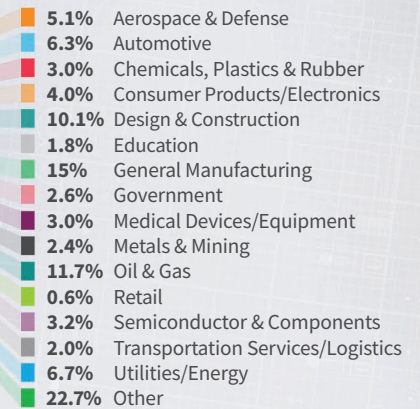
Company Headquarters



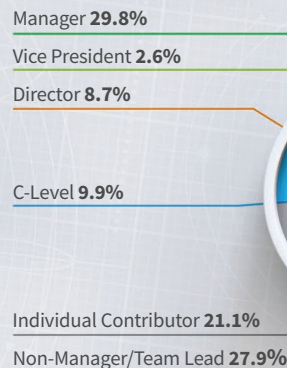
Revenues



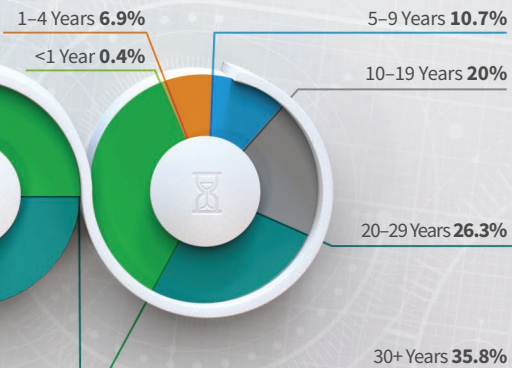
Sector/Industry



Title Level



Tenure



The Results

The Shrinking Technical Workforce

“There’s no organization that I know of that isn’t concerned about the shrinking technical workforce,” says Fred Filler, director of engineering content with IHS Product Design. Filler notes that the high point for engineering graduates from Western universities traces back to the early-1980s, so the “magic 65” retirement age is coming into clear view for a high percentage of these engineers. “As this point, we’re expecting half of today’s knowledge workers to retire over the next few years,” Filler adds, noting that companies dependent on knowledge workers are becoming very concerned about the implications of the coming mass exodus.

And it’s not like the engineering pipeline is filled with up-and-coming professionals. During the early-2000s, for example, the technology bubble burst—a phenomenon that pushed potential engineers and technical professionals to seek out alternate educational opportunities and/or lines of work. “When we look at the natural, next progression of engineers coming into the workforce,” says Filler, “there just aren’t as many.” Even for those companies that do successfully recruit technical professionals, the time it takes to train and cultivate them can take five to 10 years or more—yet another obstacle that firms need to be aware of as the “Big Crew Change” begins.

In some cases, companies work against themselves on the knowledge worker front. During mergers and downsizing, for example, it’s often the top-tier, most experienced, and highest paid engineers who receive the early retirement offers. This strategy may make sense from an immediate-term financial perspective, but it can fail miserably when those senior workers are replaced with younger, inexperienced talent. Put simply, there usually is no replacement. Companies subsequently face sudden knowledge gaps that can quickly bring to a halt any growth, cost optimization, and risk management objectives.



In the past two years, how have employee losses in the technical workforce changed?

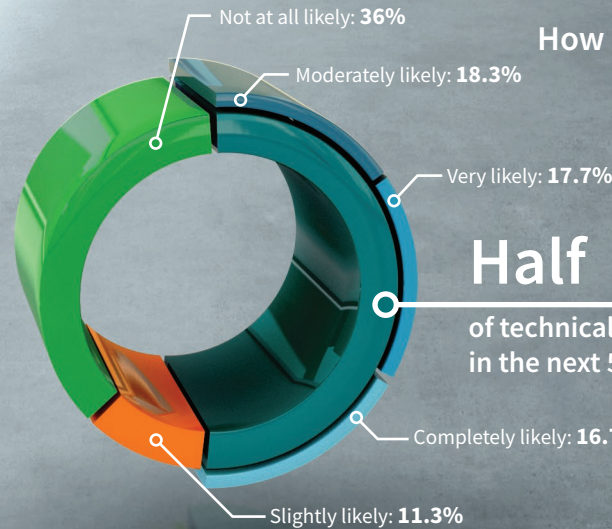
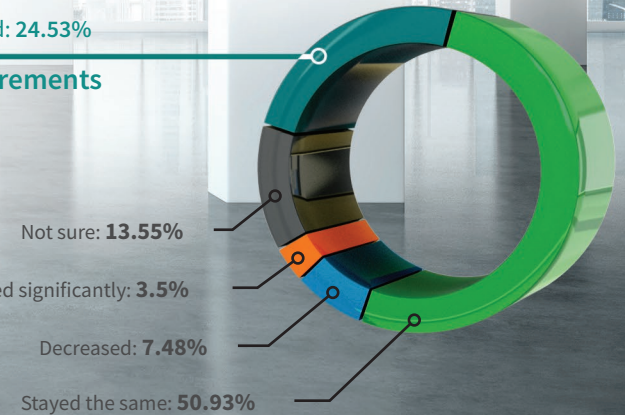
1 in 4

Increased: 24.53%

organizations has seen an increase in retirements of senior technical employees

Retirements on the Rise

Nearly 25% of firms are dealing with an increase in the number of senior technical employees who are retiring and leaving the workforce completely.



How likely are you to be retired 5–10 years from now?



Half

52.7%

of technical professionals are looking at retirement in the next 5–10

The Results

The Shrinking Technical Workforce

We asked a number of questions directed at learning what was happening with the technical professional workforce as a whole. And one of the things that we wanted to learn was whether the corps of knowledge workers was growing, shrinking or remaining stable.



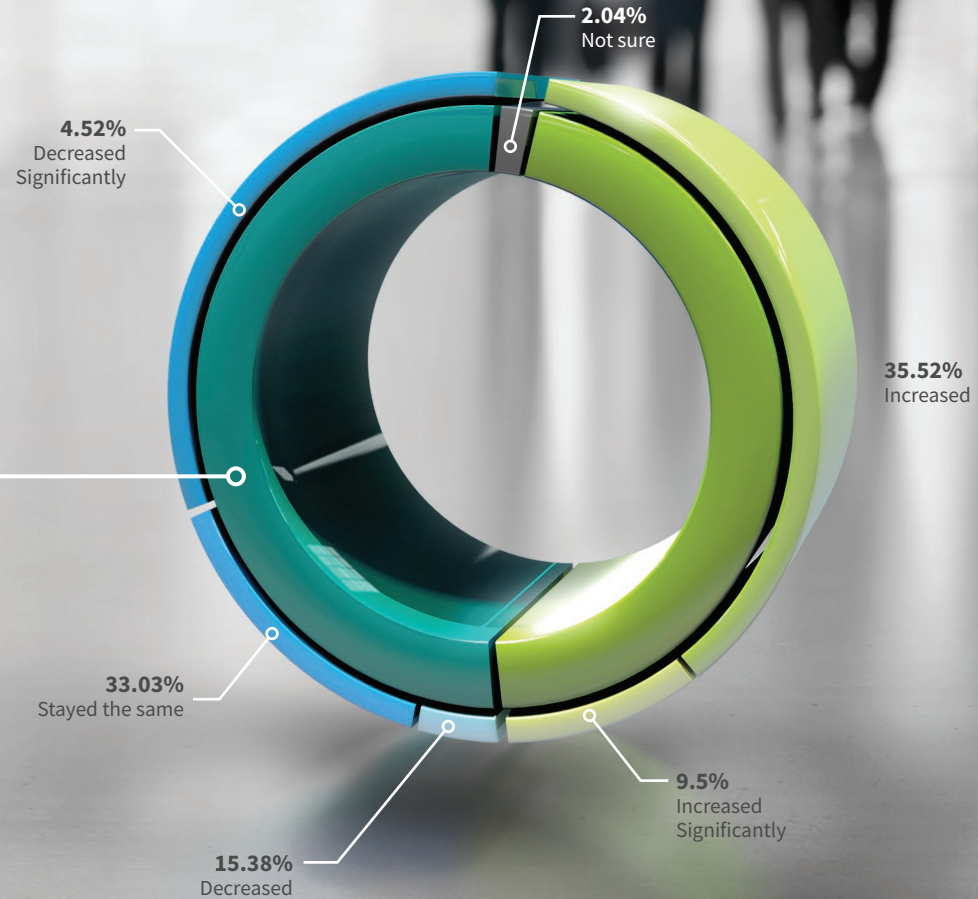
In the past two years, how has the size of your company's workforce of technical professionals changed?

52%

of companies have shrunk their technical workforce or not grown headcount

Holding Steady or Reducing Headcount

The technical professional workforce has experienced significant changes over the last two years, with 52% of firms either shrinking this aspect of their workforces or simply not growing headcount at all during this time, according to the SDCE survey results.



The Results

Delivering More Value with Fewer Resources

Under increasing pressure to deliver more value with fewer resources, and to do all of this faster and at a lower cost, the technical enterprise is dealing with a new host of challenges in today's business environment. According to the SDCE survey, 72% of knowledge workers say they are having to "do more with less"—take on more work, and complete more projects, with fewer resources.

At the same time, 64% say the pace of engineering is increasing and 44% say that their organizations are losing expertise faster than they can replace it. These complications inevitably have a negative impact on corporate performance in a world where both speed to market and quality of product and service are increasingly seen as "must haves."

As an example of this sort of impact, Jeff Cloutier, a director with IHS Product Design, relates the story of a manufacturer of hypodermic needles that was dealing with a discoloration issue on its products' plastic bases. Nurses would open the needles, see the discoloration, and promptly toss them in the trash—assuming that they were non-sterile or otherwise unsafe to use. This wasn't the company's first time grappling with the same issue, but this time around the engineer who had solved the problem in the past was now retired.

The company's current engineers couldn't locate him, couldn't find the database where he'd recorded the related data, and were unable to access his laptop. "The solution was somewhere within the company, but no one had any idea where it was or how to access it," Cloutier says.

The company eventually located the engineer and the solution, but they lost time and wasted effort in the process—not to mention the loss associated with customer satisfaction issues and the number of discarded (and perfectly sterile and functional) hypodermic needles. This is just one example of how a seemingly minor knowledge gap can create significant—and even irreversible—consequences.



37%

I'm overwhelmed by information.

44%

Losing expertise faster than can gain it.

54%

Cost cutting pressures are putting quality at risk.

64%

Pace of engineering is increasing.

72%

We are required to do more with less.

The Results

Delivering More Value with Fewer Resources

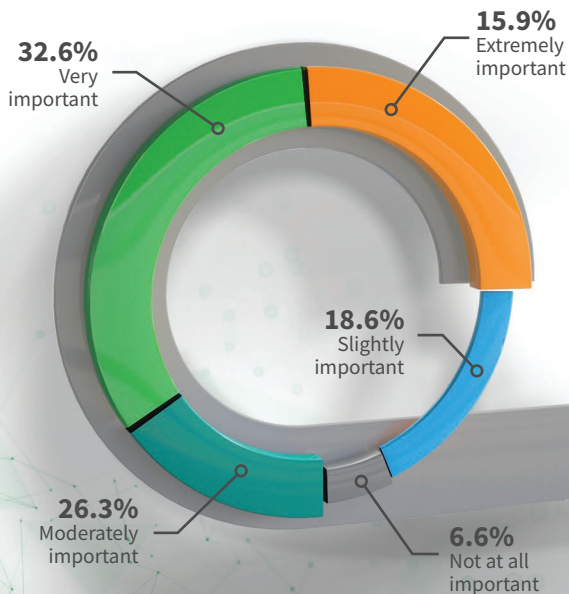
Talent Shortage Already a Problem

Drilling down further, 85% of survey participants say a shortage of talent and knowledge are already having a significant impact on the technical enterprise, while 86% say the resource/people shortage is negatively impacting product quality.

Knowledge Loss Also Looms

When asked about the potential knowledge loss due to technical professionals leaving their companies, 75% of respondents view this knowledge loss as a "critical issue" facing their organizations right now.

How critical an issue is knowledge loss due to technical professionals leaving your company?



Do you agree that the following statements apply to your company?



3 in 4


organizations view knowledge loss as a critical issue facing their organization

The Results

It's Not Easy Being a Knowledge Worker

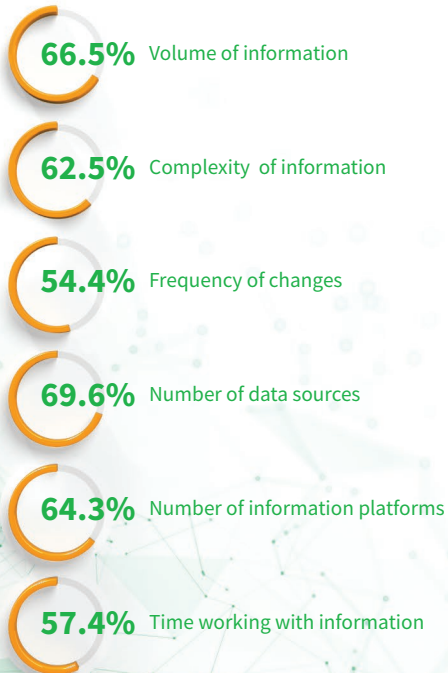
Data Complexity on the Rise

Data complexity and the tsunami of information that knowledge workers are managing are increasing complexities for the vast majority of technical professionals. In fact, two out of three surveyed by SDCE said the volume of information they're dealing with is rising. The number of information platforms that they're working with is also increasing, as is the complexity of the information itself (63%) and the number of data sources (70%).



Data and information complexity continues to increase for the majority of technical professionals

% reporting significant increases in:



How do challenges accessing and managing information impact your organization's performance?

Information Challenges Hit Productivity

These factors are making it more and more difficult to be an engineer, scientist, or researcher in today's information-rich world. In fact, 75% of respondents say that the challenges associated with managing and accessing information impact production, quality, and innovation.



The Results

It's Not Easy Being a Knowledge Worker

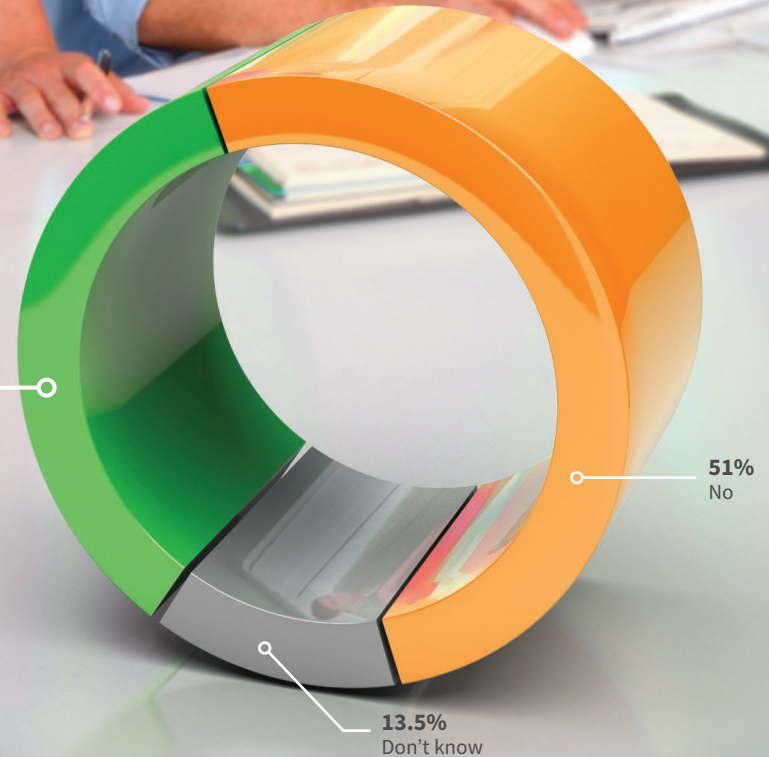
The reality is, important data, information, and knowledge can just walk out the door at any given time. This is an issue that organizations like NASA grapple with on a daily basis. But solutions are available to help organizations overcome these challenges, too. NASA, for example, used a technical knowledge management platform from IHS to index historical internal documents and websites, thus enabling a full-text search across all of the information. The platform proved its value almost immediately when an Orion Crew and Service engineer used it to research the Apollo program's upright landing system—saving NASA from having to reinvent a solution that had made its debut more than a generation ago.



Does your company identify senior/specialized professionals and transfer their knowledge to others?

Less than 50%

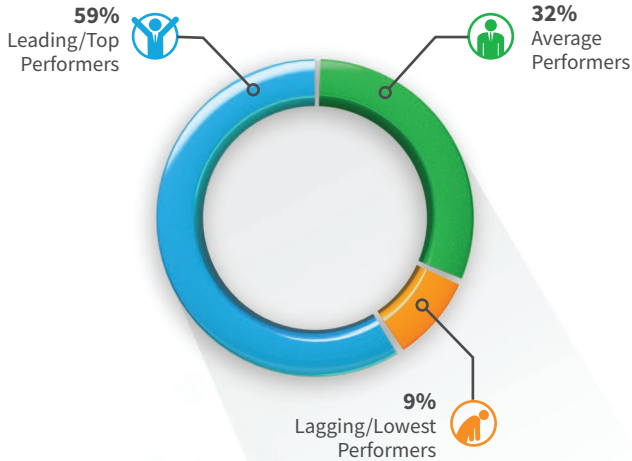
of organizations have formal knowledge transfer/retention practices in place.



The Results

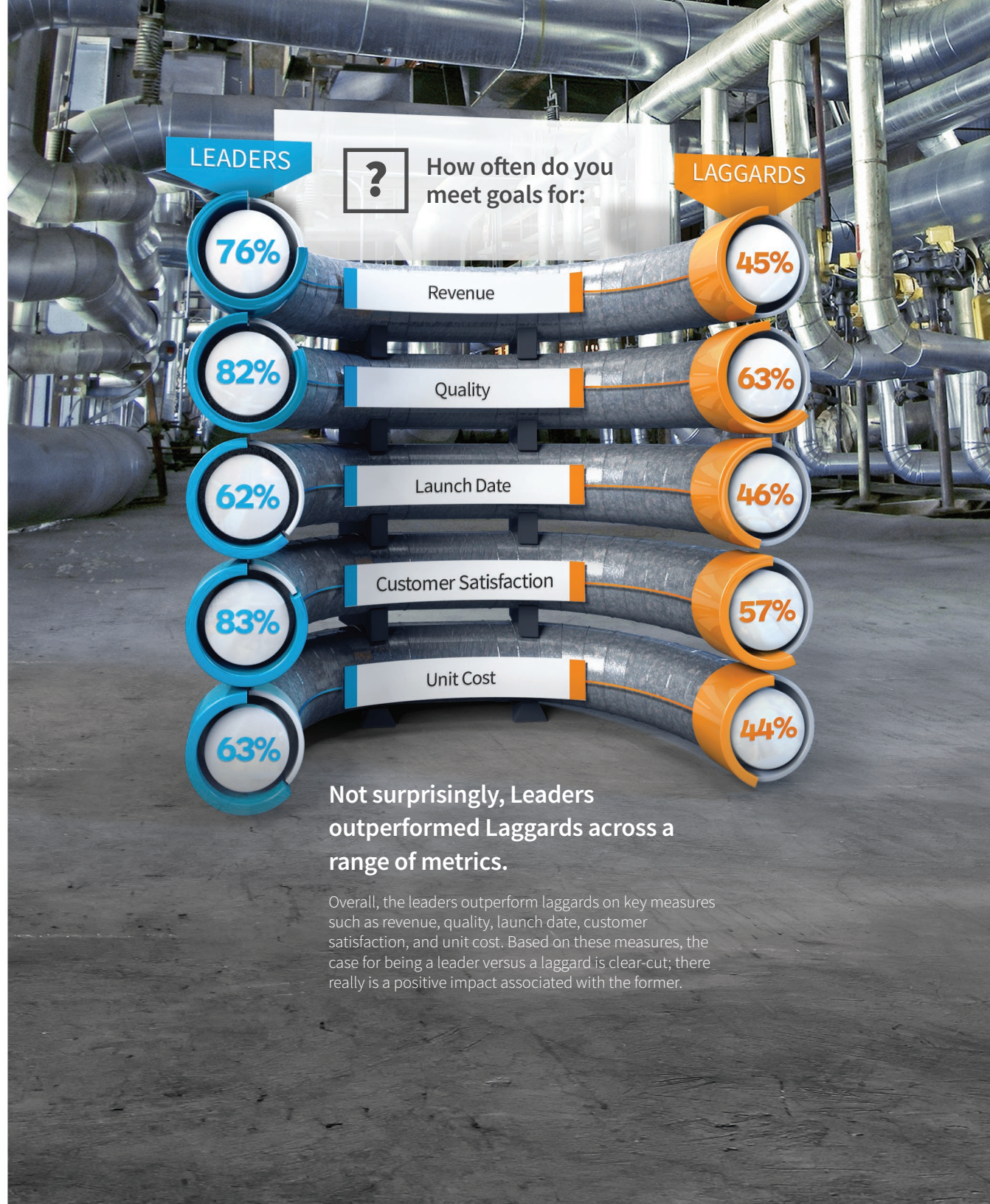
Leaders Lead, Laggards Lag

? Respondents were asked to rate their organizations as a “Leader” or Laggard.”



Separating the Leaders from the Laggards

In examining how leading organizations are using strong internal systems and processes to combat the risks facing today’s technical enterprise, the lines between the “leaders” and the “laggards” are obvious. According to the SDCE survey, 59% of participants see their firms as leaders, 32% as “average,” and 9% as laggards.



Not surprisingly, Leaders outperformed Laggards across a range of metrics.

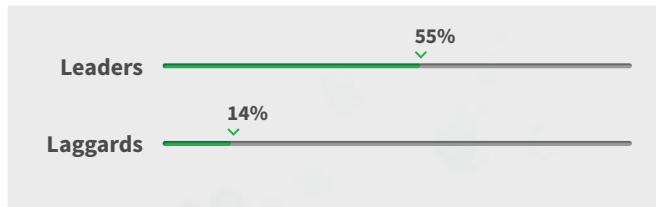
Overall, the leaders outperform laggards on key measures such as revenue, quality, launch date, customer satisfaction, and unit cost. Based on these measures, the case for being a leader versus a laggard is clear-cut; there really is a positive impact associated with the former.

The Results

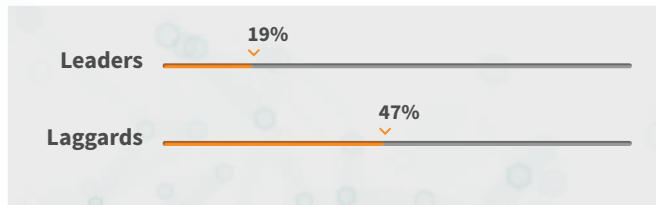
Leaders Growing, Laggards Shrinking

? In the past two years, how has the size of your company's technical workforce changed?

+ ADDING STAFF



- SHRINKING STAFF

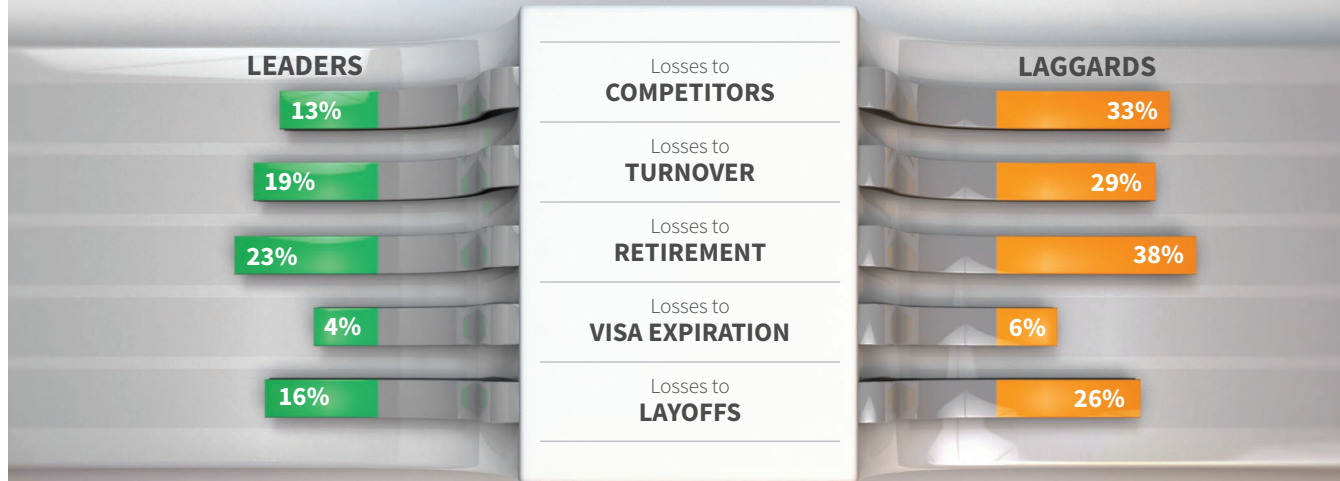


Leaders are growing their technical workforce; laggards are shrinking theirs.

Right now, leaders are growing their technical workforces while laggards are cutting back in this area. Over the last two years, 55% of leaders added staff and 14% reduced staff (versus 19% and 47% for laggards).



Companies that reported increased losses of knowledge workers in the past two years



As a result, leaders are losing fewer technical professionals to the competition, and to retirement and layoffs in general. "In most cases, the companies that are not faring well can expect more layoffs and/or a loss of workers to the competition," said Filler. "Once an organization begins to lag behind, a toxic environment begins to build up, and people don't even want to be associated with that company."

Leaders are losing fewer technical professionals to the competition, retirement and layoffs.



The Results

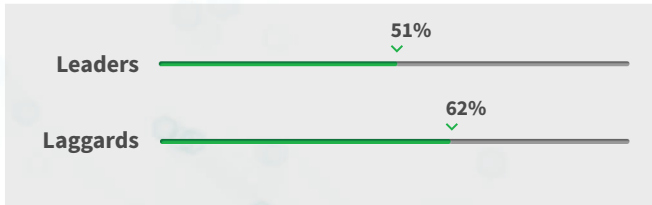
Brain Drain Impacts Everyone

Leaders are only slightly less worried about the brain drain.

This fact is particularly true within the engineering space, where professionals want to *make things better*. As such, when engineers begin to see something around them that's not working properly, they're more prone to jump ship. This reality is making companies think more carefully about the potential brain drain taking place within their technical enterprises, where SCDE reports that 51% of leading firms are worried about this (compared to 62% of laggards).

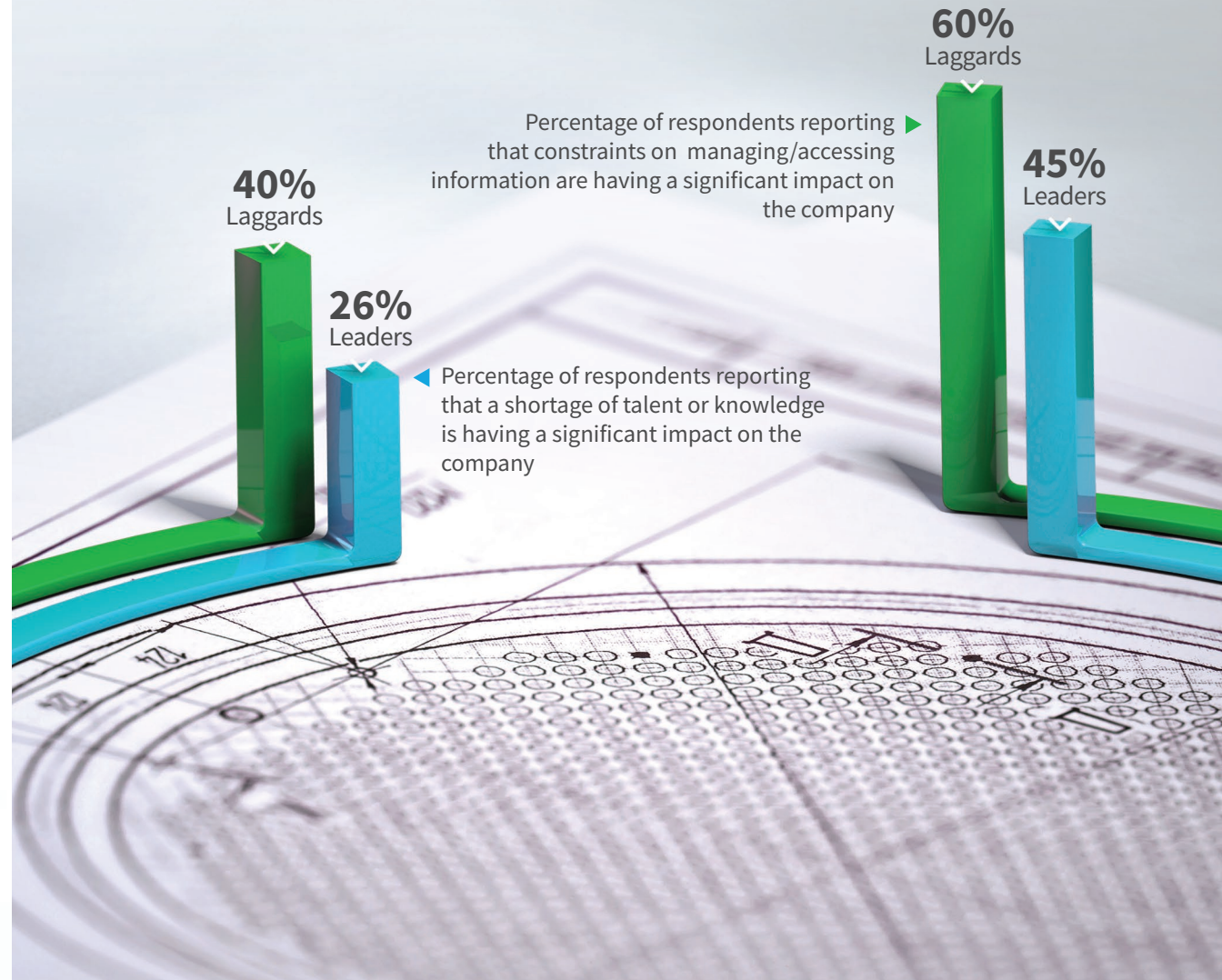


RATE KNOWLEDGE LOSS AS A VERY IMPORTANT OR EXTREMELY IMPORTANT ISSUE



Laggards are feeling greater impact from talent shortage and constraints on managing/accessing information

We noted earlier that Leaders are growing their organizations. However, companies on both ends of the spectrum are having challenges. The Laggards are concerned because they're trying to do the same amount of work with fewer people. But the Leaders are trying to deal with increased workloads or increased numbers of projects, while their headcount isn't growing proportionally to the workload. And Leaders may be growing headcount, but that really just increases the challenge of trying to transfer knowledge from the retiring engineers to the new staff coming into the workforce.

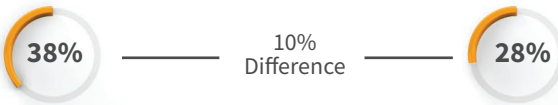


The Results

Too Few Focused on Knowledge Retention

? Even among leaders there is a striking absence of knowledge retention and management systems.

KNOWLEDGE RETENTION
practices/systems are in place



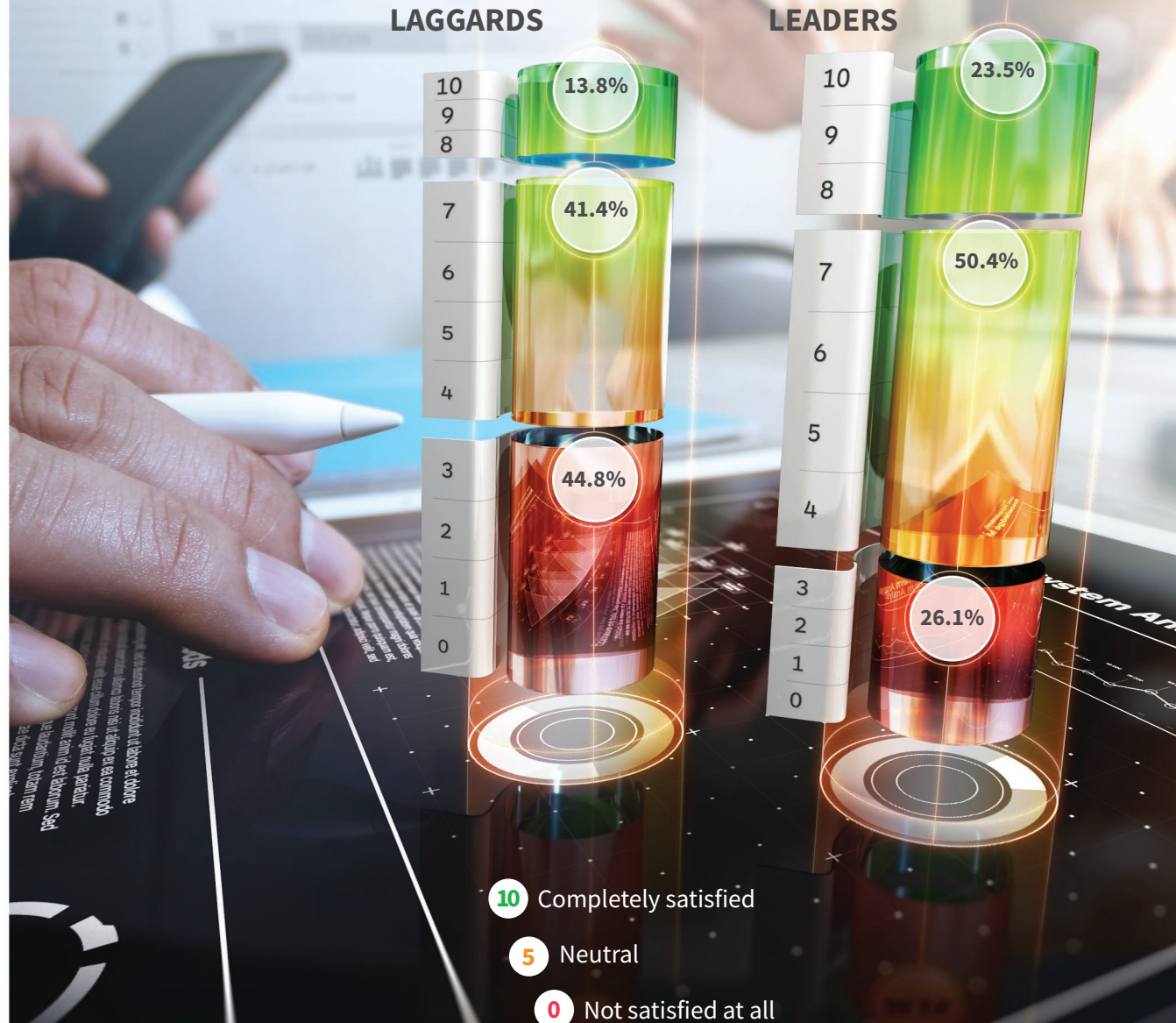
KNOWLEDGE MANAGEMENT
practices/systems are in place



Even among the leaders, a full 48% have no formal practices in place to keep knowledge from draining out and disappearing as engineers, scientists, and other knowledge workers retire.

? How satisfied are you with your company's talent and knowledge management process?

Leaders see higher levels of satisfaction with the organization's talent and knowledge management process.



10 Completely satisfied

5 Neutral

0 Not satisfied at all

The Results

Best Practices of Leading Organizations

The most effective organizations are those where senior leaders become the stakeholders and treat knowledge access and knowledge transfer as a strategic initiative that has a bottom-line effect—rather than approaching knowledge management solely at the individual contributor level and looking at it just as an expense line. Those are the companies where the senior executives look at knowledge access and transfer as a way to innovate more quickly, bring products to market faster, and help their engineers and researchers be more efficient at their jobs. Having that mindset and putting it into practice not only helps drive revenues but helps with the bottom line as well. The Leaders are viewing knowledge access as an organizational or enterprise initiative, not just an individual practice.



Leaders make it easy for technical professionals to:



Get their work done faster

Find the information they need to get their jobs done quickly



Leverage industry best practices

Tap into a broad set of content relevant to their industry and/or field



Work on different types of projects, requiring knowledge of different fields

Get up to speed quickly



The Results

The Tools that Leaders Employ

To win the knowledge race, avoid risk, and maintain or improve revenues, leading organizations are using strong internal systems and technology-enabled processes that help them effectively harness and access knowledge across the enterprise. Using the right platforms and tools, organizations can greatly improve upon their current processes, work with fewer resources, and have confidence that their technical workforces have the tools they need to operate in the most efficient and effective manner possible.



The toolkit Leaders are using to win the knowledge race includes:

Unified Knowledge Platform

- > Single point of access
- > Tuned to the user's individual workflow

Content

- > Trusted, authoritative
- > Comprehensive

Search

- > Quickly find answers
- > Facilitate exploration





IHS Markit™

Contact Us

To discuss how IHS can help you win in the knowledge race and meet your business goals, contact us today:

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For over 10 years Supply & Demand Chain Executive (SDCE) has been the only magazine in the Supply Chain industry covering the entire global supply chain that focuses on ROI, professional development and change management, all in a solutions-based format. As a C-level and line-of-business executive, you can depend on our mission-critical editorial to solve your supply chain challenges. Supply & Demand Chain Executive is THE user manual for successful supply and demand chain transformation. We help you gain competitive advantage in this complex world through hard-hitting analysis, viewpoints and unbiased case studies.”

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