How do you reshape when today's future may not be tomorrow's reality?

Oil and Gas Digital Transformation and the Workforce Survey 2020

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Building a better working world

Contents

ABOUT THE SURVEY

TRUE Global Intelligence, the in-house research practice of FleishmanHillard, fielded an online survey of oil and gas executives representing a cross-section of integrated oil companies, national oil companies, independent producers and oilfield services companies. Respondents hold different functional roles across their organizations, including IT, HR, operations, strategy and digital. Nineteen percent hold a C-suite title. Respondents live and/or work for companies with operations in North America, Latin America, Europe, the Middle East and Asia-Pacific.

The survey was fielded between 6 June and 5 July, 2020.

ONE

Executive summary

Oil and gas companies are facing disruption and uncertainty like no other time in the industry's history. Already, companies were navigating challenges related to pricing outlooks, evolving energy demand and decarbonization. The global COVID-19 pandemic accelerated this environment – prompting a historic drop in crude prices and cost-cutting measures in a way not anticipated even a year ago.

To meet these challenges, oil and gas companies are looking to digital technology to drive efficiency and productivity into operations, transforming how they operate and truly doing more with less. This comes with its own set of challenges: digital technologies are evolving rapidly and companies must determine which to embrace and adopt, where to integrate them into the value chain and how to fully leverage them to extract maximum value from the investment.

The June 2020 survey of oil and gas executives clearly demonstrates the industry understands the most promising path forward. Executives need the right digital technology – and a workforce with the skills and training to maximize those tools.

For example, our survey found most industry insiders recognize the competitive advantage a digitally enabled enterprise can deliver: 80% are investing at least a moderate amount in digital technology today, relative to their budget. Further, not one participant responded that their company is planning no investments in digital. It is clear the current environment makes these investments more urgent rather than less.

But how well positioned are oil and gas companies to earn back the value of their investment in technology, especially in the current environment? And more pointedly, how well positioned are their workforces – based on the technical and adaptive skills needed for these technologies – to successfully enable this digital transformation?

Our survey revealed significant skill gaps even among current users of digital technologies. Workforce composition and training are widely acknowledged barriers to technology adoption, and the skillsets needed to onboard and extract value from digital technologies – data analytics, cybersecurity, data science, design thinking, artificial intelligence and others – far outpace the current level of maturity across the industry.

Not surprisingly, 92% of the executives we surveyed recognize the ability to reskill quickly is crucial. The challenge confronting the sector can be summarized in three figures: nearly 60% of the workforce needs to be reskilled or upskilled, 43% of the workforce will be reskilled or upskilled, and it will take 10 months to reskill the average worker.

To achieve this, companies must:

- Overcome cultural and organizational barriers, including resistance to change; values and mindset; and governance and organizational design elements that hinder flexible, rapid decision-making.
- Solve for reskilling fundamentals such as developing badge programs and building curricula that curate open-source learning material and align to intentionally applied, on-the-job learning experiences.
- Proceed quickly despite the impulse to sacrifice these efforts to other priorities in the worst market many of us have ever experienced. If companies wait to come out of the downturn to invest, they may not come out of the downturn. Skills will be the competitive advantage.

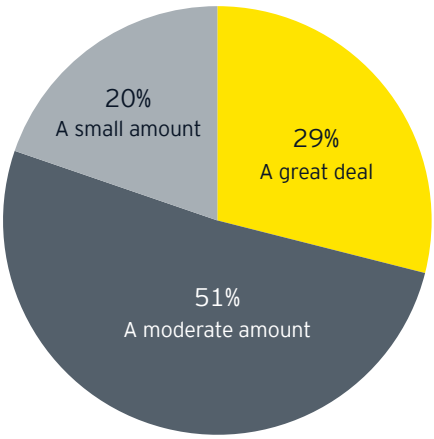
The ability to make difficult choices and find the right balance will determine who emerges best positioned to thrive in the post-pandemic marketplace.

TWO

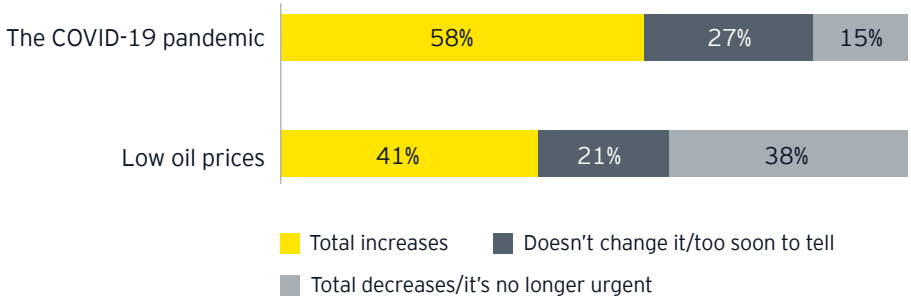
Everyone agrees – digital is critical

Oil and gas executives recognize the value in digital technologies and anticipate significant investment in them. Despite a breadth of disruptive trends facing the industry, survey respondents believe increasing availability of data analytics and insights has the greatest potential to positively impact their business growth.

Planned investment in digital technologies relative to total budget



Investing in digital technology



EY insight:

Oil and gas companies that have not fully embraced digital technology must do so now. Organizations must do more than just capture the full value of their existing digital investments – future technology enhancements must truly underpin the company's strategic vision. Companies must turn to technology to meet market expectations, while continuing to secure value from investments, and drive efficiency through value chain integration. Efforts to decarbonize the economy only add to this need.

"Predictive analytics gives oil and gas access to huge amounts of data. Our ability to tap into that data is the fuel for transformation.

IT human resources executive, integrated oil company

43%

identified the increasing availability of big data analytics and insights as one of the top-three trends that will positively impact their company's business growth in the next three years.

39%

identified decarbonization and other changes in response to climate change as another of the top-three positive trends of the sector, as much a technological as a business challenge and a reminder that companies can position themselves to gain from decarbonization.

92%

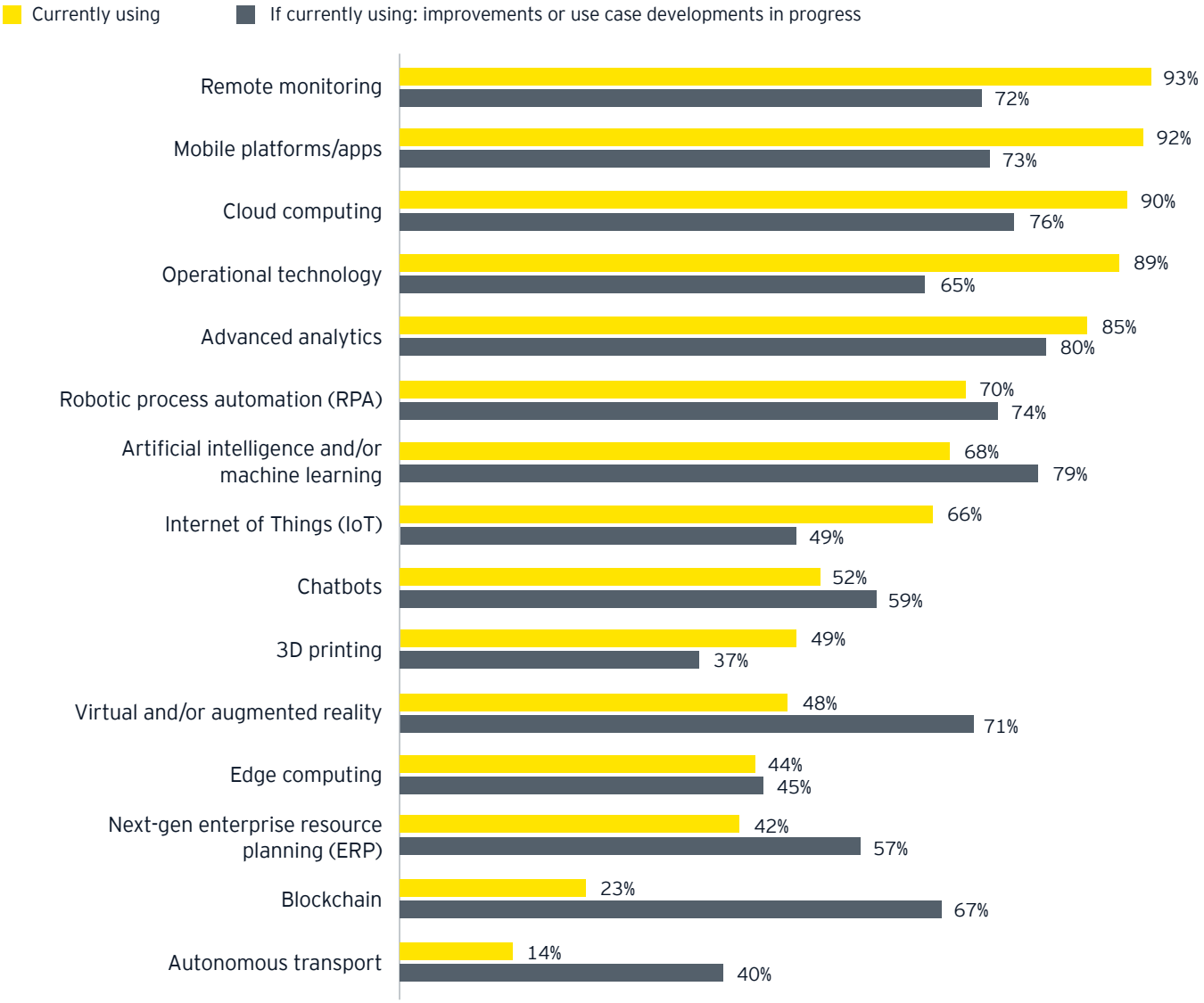
agree their organization will have to change the way it operates coming out of the current downturn.

"We need to keep evolving as a company or we're going to become obsolete. We have to innovate, we have to be up to date, we have to be current, we have to be ahead of it, or the company will be taken over by somebody else and it'll cease to exist.

Digital operations executive, integrated oil company

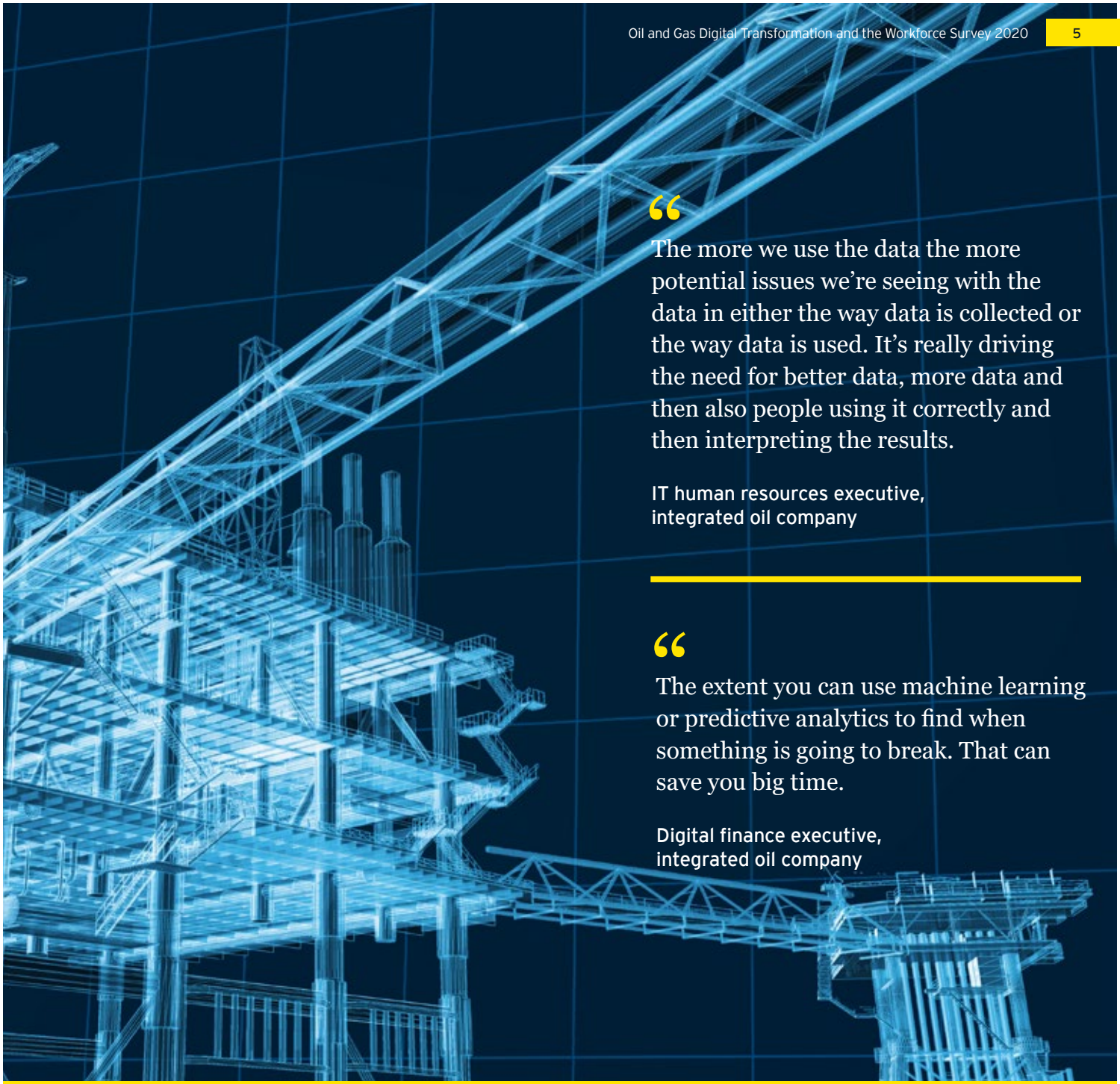
Oil and gas companies are currently using and actively developing new use cases or improvements across a breadth of digital technologies.

Digital technologies currently in use (yellow bar) and, if currently using, improvements or use case developments in progress (gray bar)



EY insight:

Data and analytics are key to driving efficiency across the value chain. As an example, our estimates show an oil and gas company could potentially unlock more than US$145 million of value annually by integrating its key processes across the upstream oil and gas value chain with a common data model. However, without skilled and trained workforces to operationalize around a common data model or to fully integrate processes across the organization, oil and gas companies will continue to leave money on the table.



> The more we use the data the more potential issues we're seeing with the data in either the way data is collected or the way data is used. It's really driving the need for better data, more data and then also people using it correctly and then interpreting the results.
>
> **IT human resources executive, integrated oil company**

> The extent you can use machine learning or predictive analytics to find when something is going to break. That can save you big time.
>
> **Digital finance executive, integrated oil company**

Oil and gas companies generate huge amounts of data, which is often recorded manually across multiple, disconnected paper records or spreadsheets by siloed functional teams (often with different data management practices). As a result, employees spend a lot of time finding and validating data manually — outdated processes that often slow critical decision-making and lead to project delays.

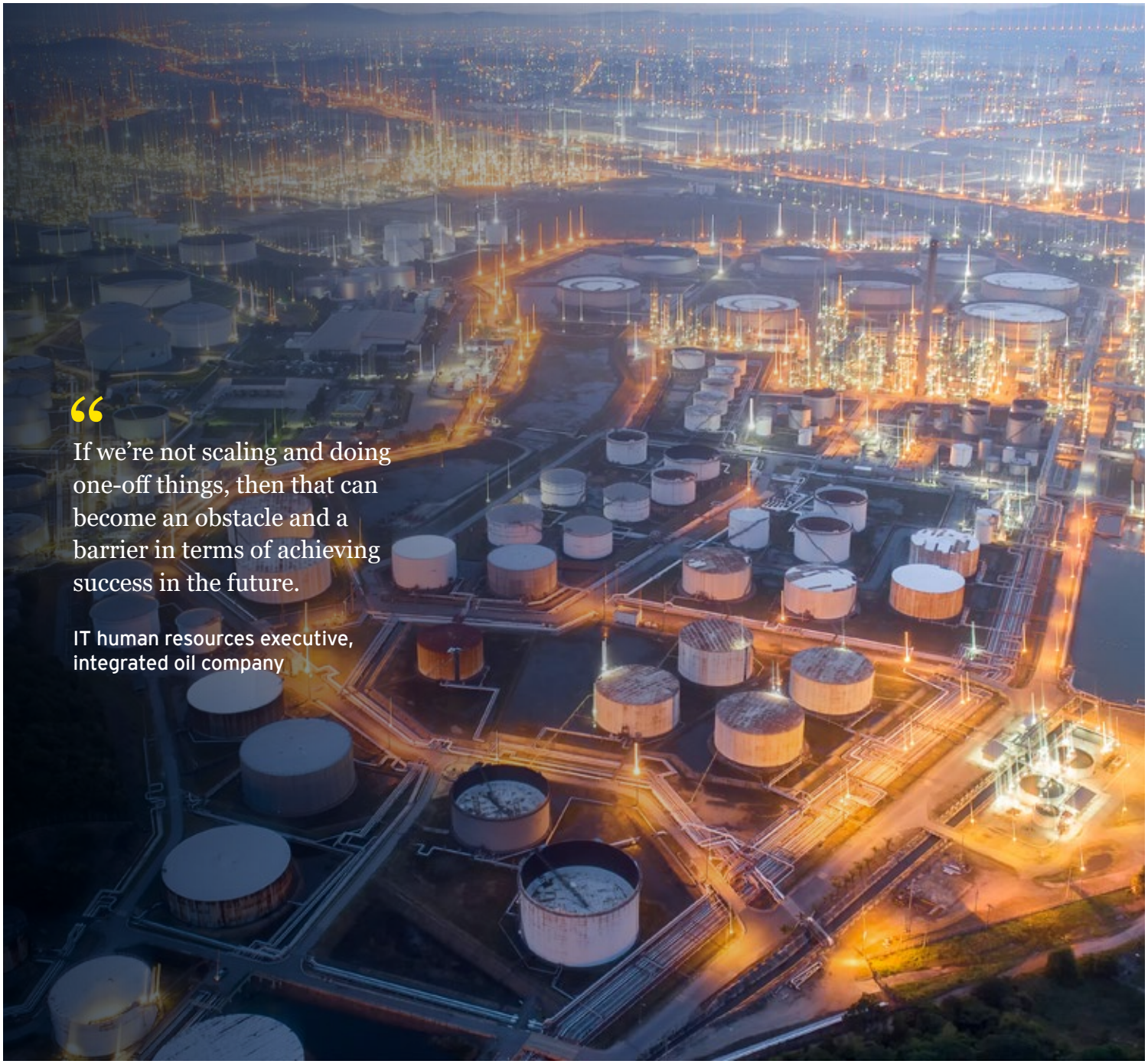
Because oil and gas operations are highly complex, large scale and capital intensive, even small errors and inefficiencies can cause significant value leakage and cost millions of dollars. For example:

- Our studies show that at some companies, as often as 75% of the time, a rig schedule is reworked due to a lack of data integration between production and land departments and a lack of clarity on what a company owns and where.
- Companies sometimes inadvertently lose value from expiring leases due to unmet minimum drilling commitments.
- An oil and gas company, on average, faces nearly 27 days of unplanned downtime annually, amounting to losses of nearly US$38 million to US$88 million.
- Without an integrated view of upstream operations, companies tend to overbuy equipment and materials needed in the field. This results in billions of dollars of unneeded supplies.

THREE

Being digital vs. doing digital

Many challenges to technology adoption are organizational and cultural – coordinating across departments, the ability to change in a timely manner, a lack of workers with the right skills and the challenge of training workers to use new technologies.



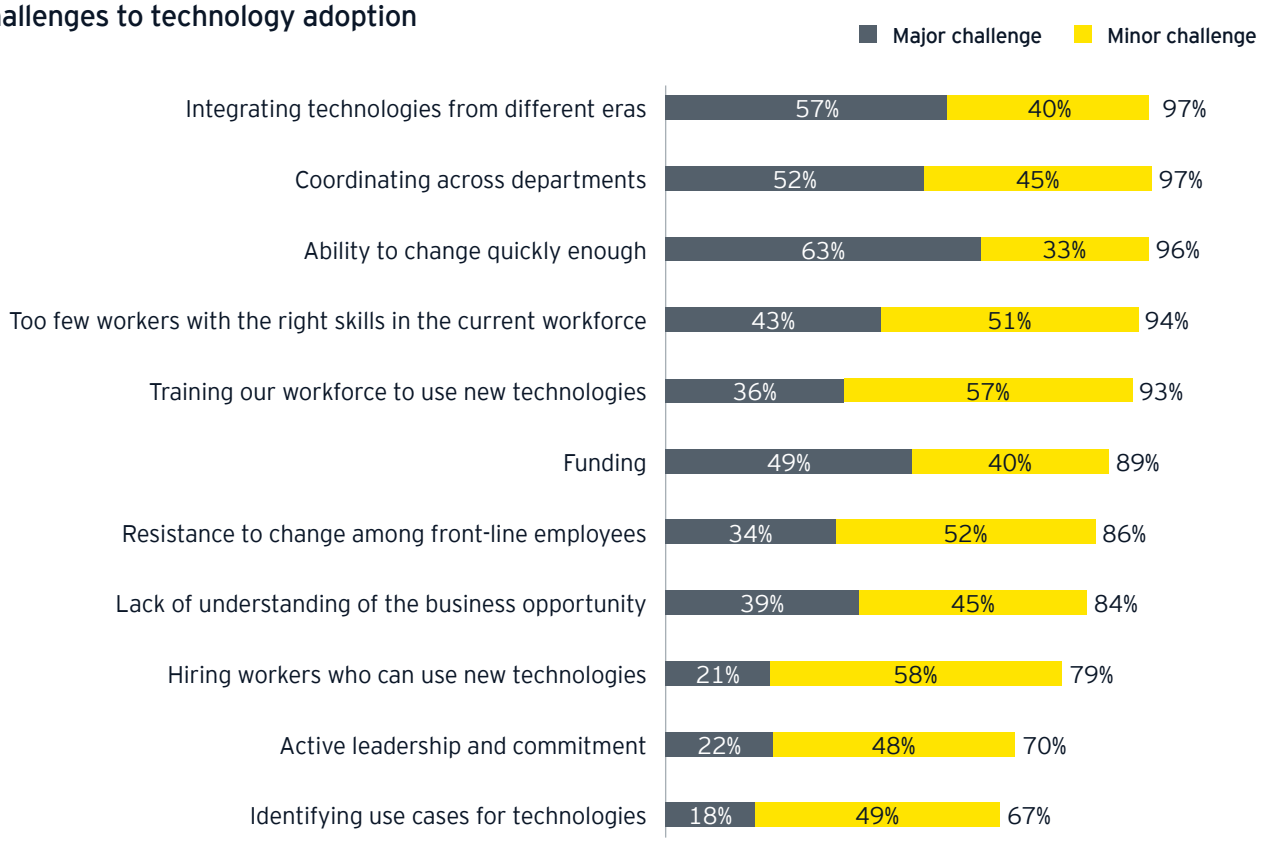
"If we're not scaling and doing one-off things, then that can become an obstacle and a barrier in terms of achieving success in the future.

IT human resources executive, integrated oil company

> If you think about barriers, there are cultural barriers, there are technology barriers and then there are skills barriers. You can throw money at a problem and upskill your workforce. You can throw money at a problem and bring new technology in. Culture is a tougher nut to crack. The reality is, you can throw all of the money and resources you want at the other two but if you still have that cultural barrier blocking you, you're going to fail.

Digital finance executive, integrated oil company

Challenges to technology adoption



EY insight:

Companies need to become digital, not simply do digital. Market leaders in the adoption and application of digital technologies intentionally invest to address the organizational and cultural elements, which others often neglect. This includes flattening the organization to accelerate decisions, realigning performance metrics and incentives to match the desired behaviors and enabling employees through integrated learning that advances skill development in real time. Companies need to assess their plans to become more holistic in addressing these key challenges.

FOUR

The skills gap is real

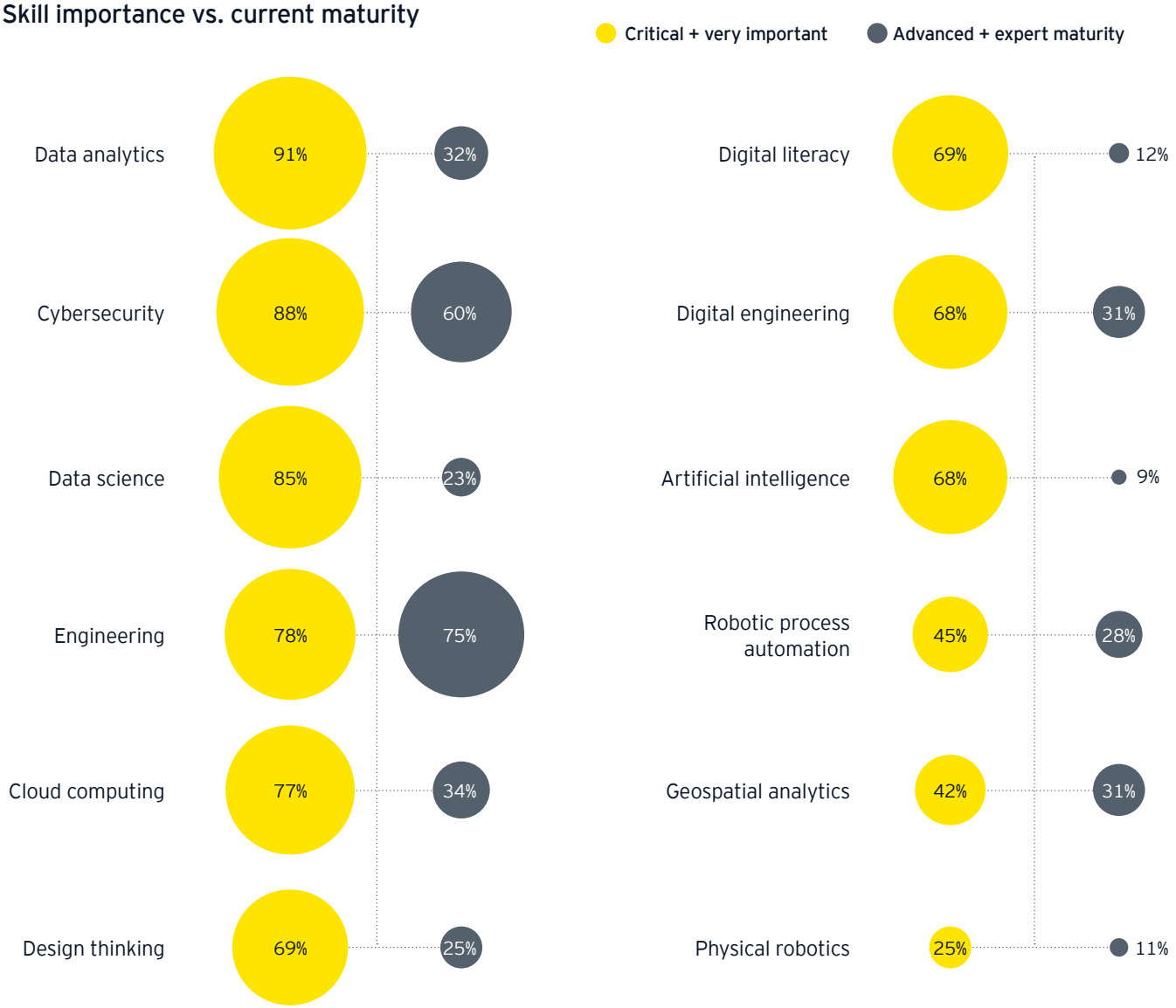
Among the technologies that companies currently use or are planning to use, a significant percentage of executives say their company does not have the skills necessary to realize the technology's investment value. Further, there is a substantial gap between the importance of specific skills and a company's current maturity across the full range of digital technologies.

Have access to the skills necessary to realize investment value in technologies they are currently using (or planning to use).

> We can have the best technology, but if you don't have the ability to connect the dots, to understand where the application of technology would create either better process efficiency that we're trying to have, or create a totally new top line for the organization, or new business for the organization, none of that would happen.

Human resources executive, national oil company

Skill importance vs. current maturity



EY insight:

It's not enough to simply spend more on digital technology. Oil and gas companies must also understand where they have knowledge gaps and invest significantly in addressing those. The ability to incorporate an intentional skills strategy into digital implementation plans will be a core driver of value realization. The strategy should balance training as well as applied and experiential learning as part of a broader learning framework.

"You need to have a very clear framework that helps you identify current gaps and, again, sets the desired skills that you're wanting to build. We're using some third-party tools where someone goes and takes a certification ... But just because someone passes a test, that doesn't mean that they're proficient in applying those skills on the job. It's very important from a reskilling standpoint to switch from measuring training completion to measuring applied learning.

IT human resources executive, integrated oil company

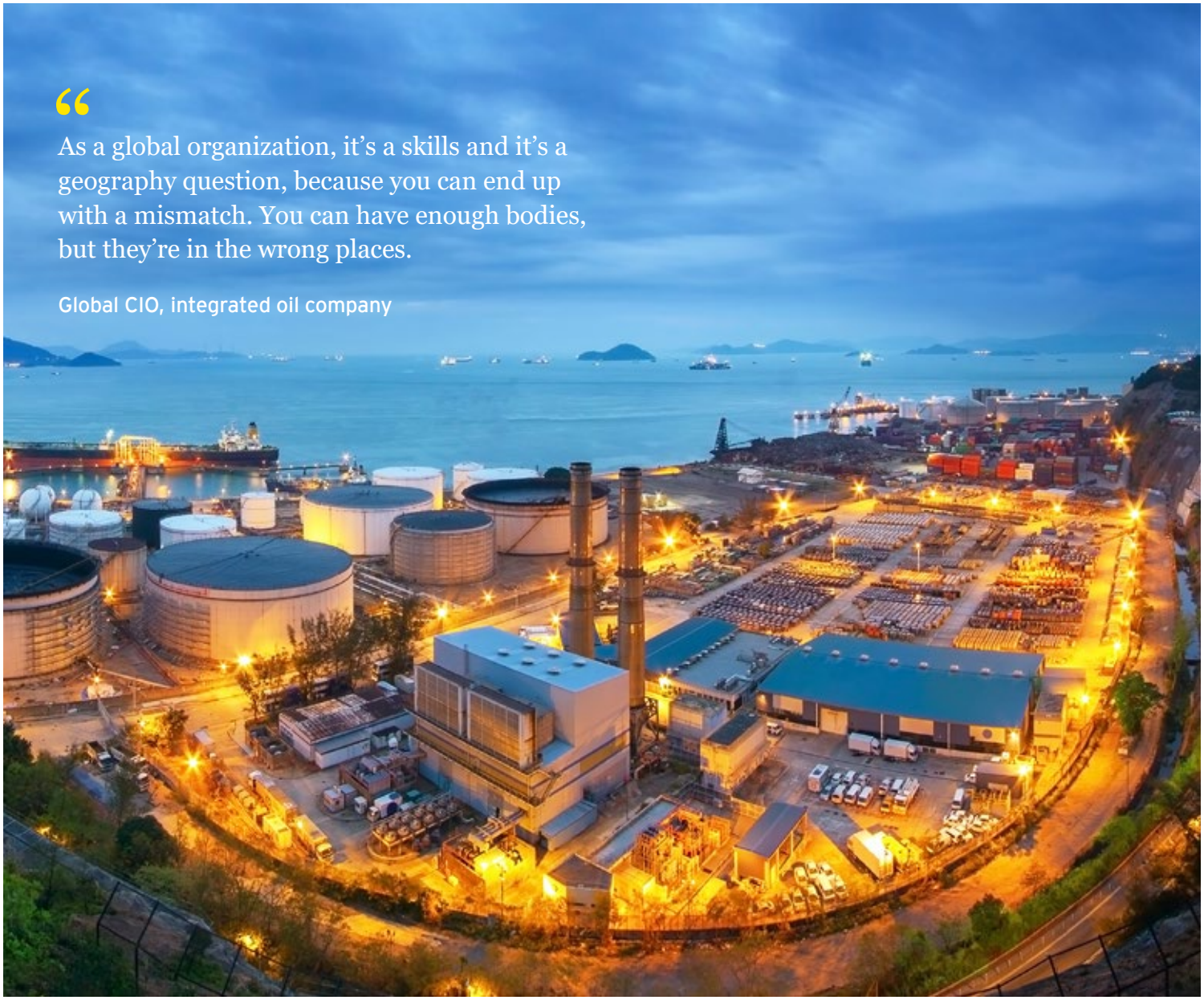
"The skills required to understand how you create new value, a new way of doing things or a new business product, those are the skills that we need.

Human resources executive, national oil company

FIVE

Competition for talent will heat up

Executives predict shortages of workers with digital skills will improve over the next three years, but this may be overly optimistic given the market demand for these skills across all industries. Further, even with increased availability, many still anticipate inadequate access to certain skills.

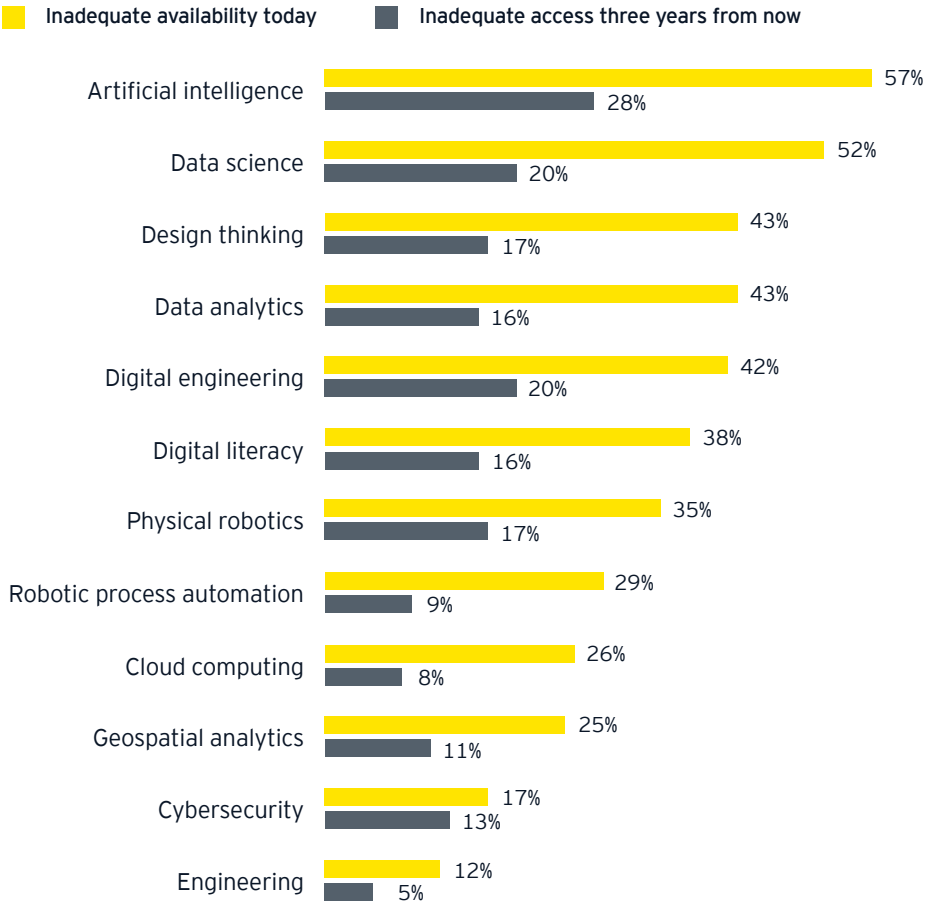


"As a global organization, it's a skills and it's a geography question, because you can end up with a mismatch. You can have enough bodies, but they're in the wrong places.

Global CIO, integrated oil company

> The younger generation doesn't view our industry like previous generations did, and so we've got to overcome that stigma.
>
> **Digital finance executive, integrated oil company**

Skill availability today and access to skills in the future



The greatest shortfall is on arguably the most important of digital technologies, artificial intelligence (AI), a critical and potentially game-changing technology given its role in taking advantage of big data. Without AI, it is doubtful companies can take full advantage of the sheer volume of data other digital technologies either generate or rely upon.

EY insight:

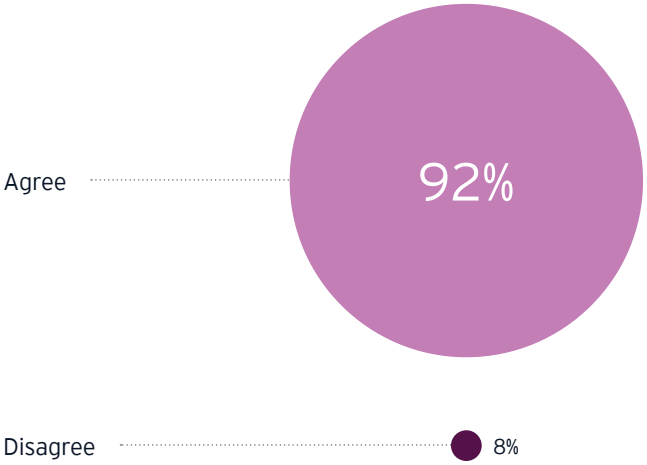
While executives optimistically anticipate improved access to technical talent in the future, there are several trends pointing toward an ongoing skill gap problem. First, competition and demand for these workers are growing across every industry, all of which are facing shortfalls of their own. Second, our 2017 EY US Oil and Gas Perceptions Survey found traditional tech companies and many other sectors are more attractive than oil and gas to younger workers. Further, there is a convergence in talent markets in many geographies that will also impact oil and gas. These factors will create challenges for oil and gas companies as they work to recruit new talent, making reskilling and upskilling even more critical to future success.

SIX

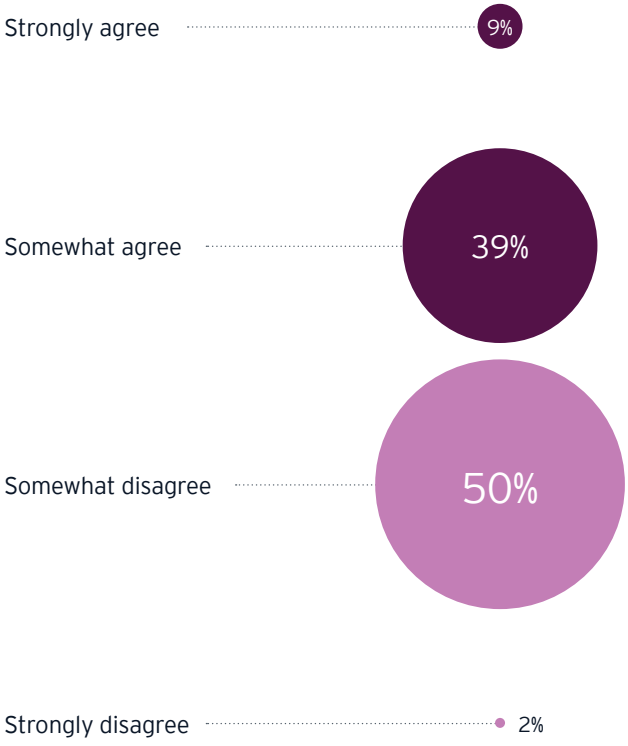
So what will companies do?

Despite the recognized importance of skills to their success and competitive advantage, most oil and gas executives report their companies do not have a robust plan to reskill their workforce. Instead, executives say their companies will deploy a smattering of strategies to account for these gaps.

Our ability to reskill as a company will determine our success over the next three years.



We have a robust plan to reskill over the next three years.



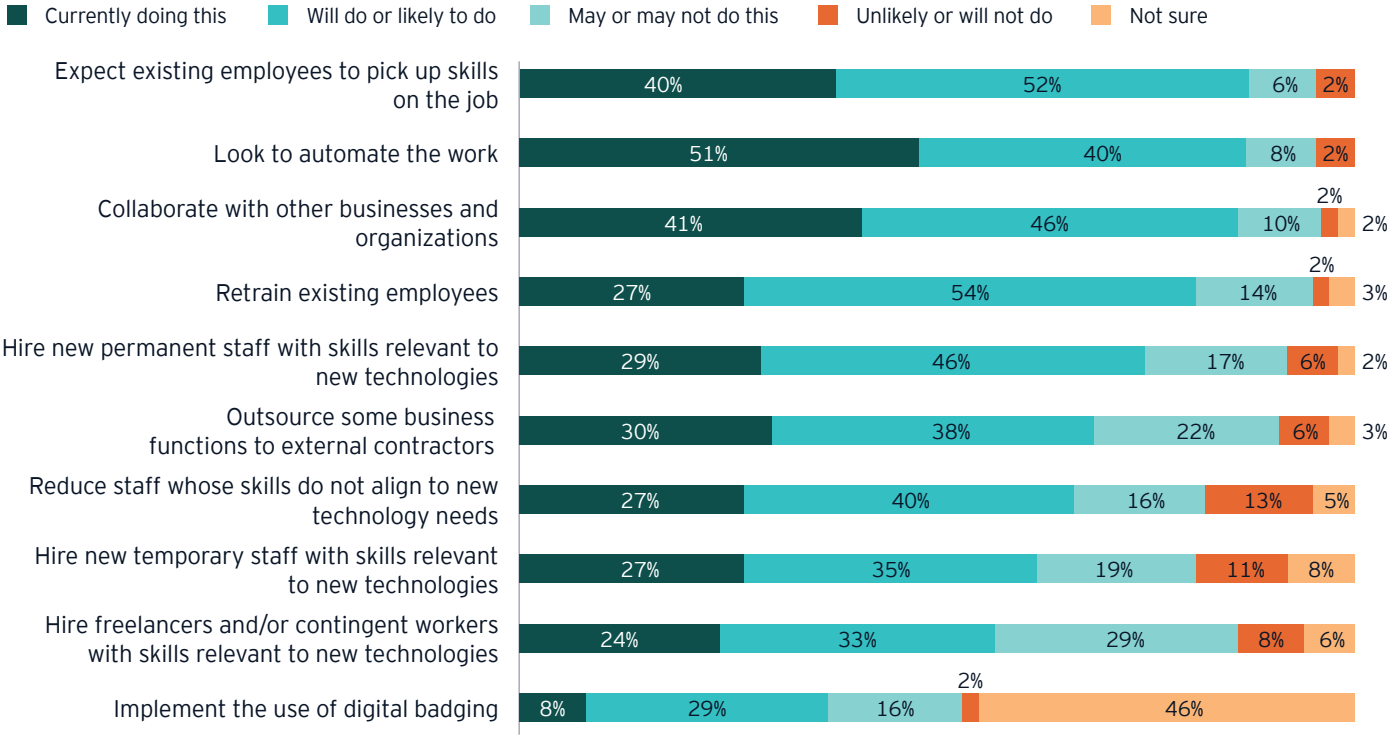
"There's at least four different ways in which we can get those skills: retrain, redeploy, recruit and rent. This will help us focus around what is that talent strategy, how much resources or capital or investments do we have, and what is maximum and optimum for us now around our business strategies."

Human resources executive, national oil company

"Once you understand what your gaps are today and going forward, then you can make some choices about how you want to fill them and prioritize them. But I really wonder whether organizations have invested the time to understand really where they are. And where they're going to find themselves in a few years, because that's been a big one for us.

Global CIO, integrated oil company

Companies are using a variety of strategies to address changing skill needs.



EY insight:

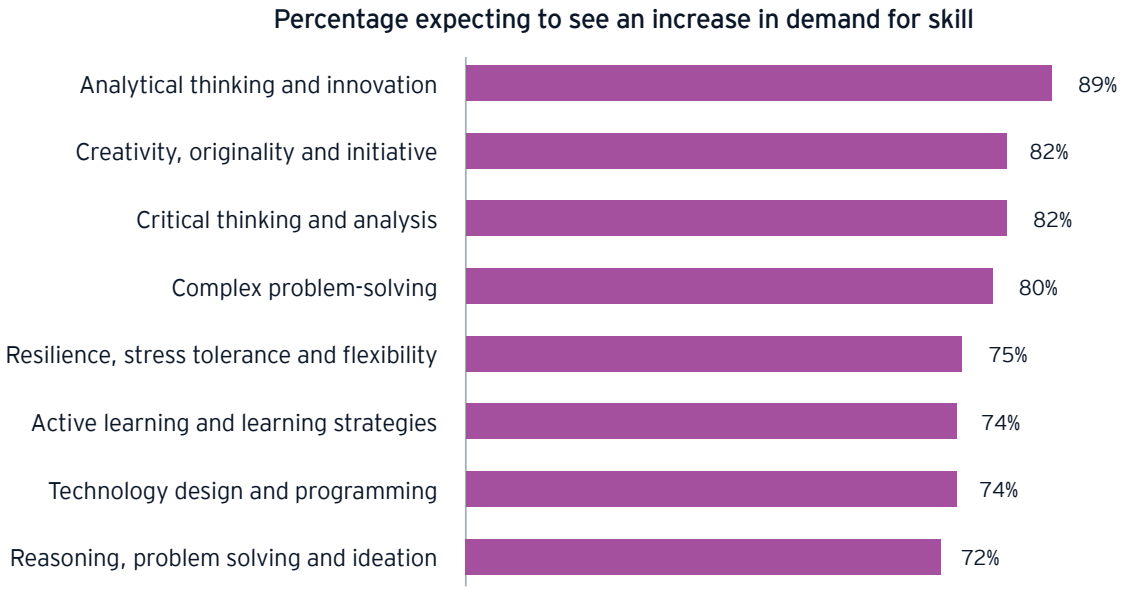
For most companies, the approach to filling skills gaps is highly variable and fragmented. Companies need broad consensus on priority skills and a coherent, comprehensive approach to identify the skills they have, those they need now and those they will need in the future, and then address the gaps with measurable and interconnected strategies.

SEVEN

An influx of adaptive skills

The digital era will drive a reordering of priority skills in the workforce. Historically referred to as "soft skills," these adaptive skills are critical to the behaviors and mindset necessary to have the flexibility, creativity and resilience to test and apply new technologies against industry problem sets. The challenge – these skills are in short supply and needed across all industries.

"Adaptive" skills are expected to become more in demand over the next three years.



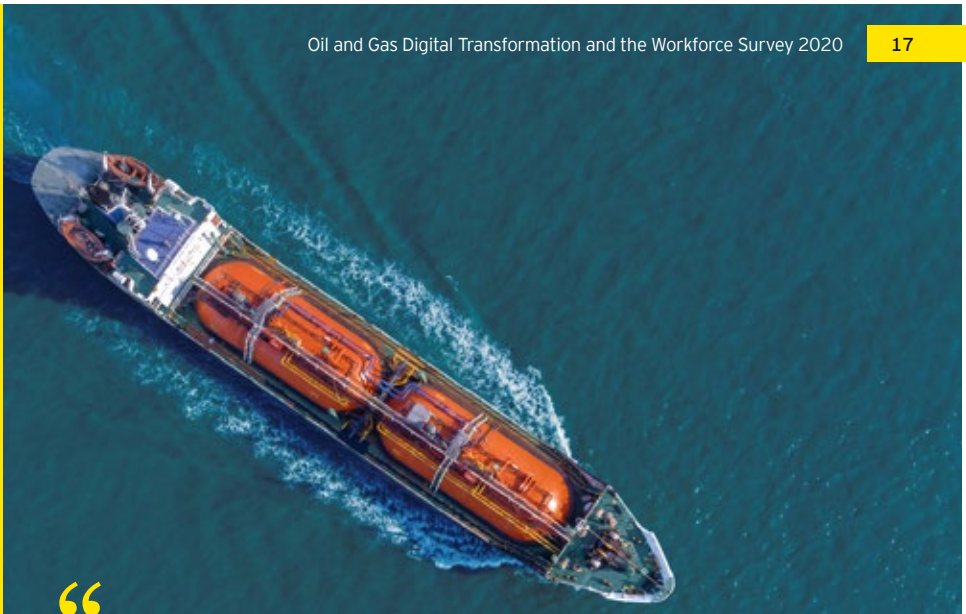
EY insight:

Effective adoption of digital technologies requires behavior, mindset and skill shifts. It is not enough for companies to have the technical expertise to make use of a technology. They must also have the skills to apply those technologies as broadly and strategically as possible – with critical thinking, creativity, innovation, problem solving, ideation, etc. – to find and extract every bit of value possible. This is the difference between doing digital and being digital.

The future of work requires people with different capabilities and mindsets. By focusing on adaptive skills, oil and gas companies can pivot more quickly to meet the demands of the future business no matter the disruption in their path. To accelerate these skills in their workforce, companies need to:

1. Determine the skill needs of the company based on short- and long-term strategies.
2. Complete a robust, data-driven assessment of the workforce, segmenting roles based on new, stable, and redundant and diagnosing the gaps across each.
3. Tailor innovative microlearning to the needs of each employee. These microlearning exercises must align with the organization's macrolevel skills needs.
4. Combine meaningful coaching and mentoring with formal learning and on-the-job experiences.
5. Measure adaptive skill progress continuously against tangible benchmarks.

By approaching this workforce shift with data at the forefront of the decision-making process, companies will have a more robust and informed approach to their workforce skill needs – which in turn will enable them to provide demonstrable return on investment on their talent agenda. Further, it will allow companies to think and plan for future roles and capability requirements more dynamically as the needs of the organization evolve. As a bonus, companies will see increased employee engagement, capability and mobility; savings in hiring and redundancy costs; and better insight for mobility and internal hiring decisions – all of which will create a competitive advantage.



"With the pace of change of technology, you're going to look for people who are able to adapt ... if we're making data more readily available to people, then you're going to want people to have analytical skills who can draw conclusions from that data to make better decisions faster.

IT human resources executive,integrated oil company

"We're not trying to necessarily build people who are amazing at blockchain. We are trying to build people who are creative and innovative, can use whatever the technology is, and be adaptive and open to learning.

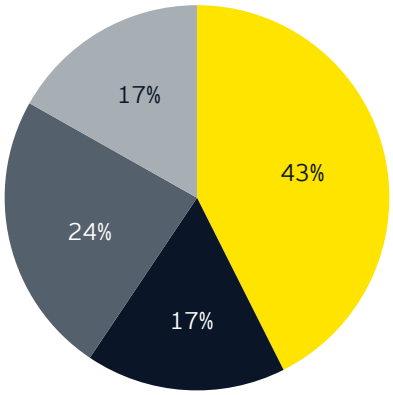
Digital operations executive, integrated oil company

EIGHT

Reskilling is more than training, it requires change

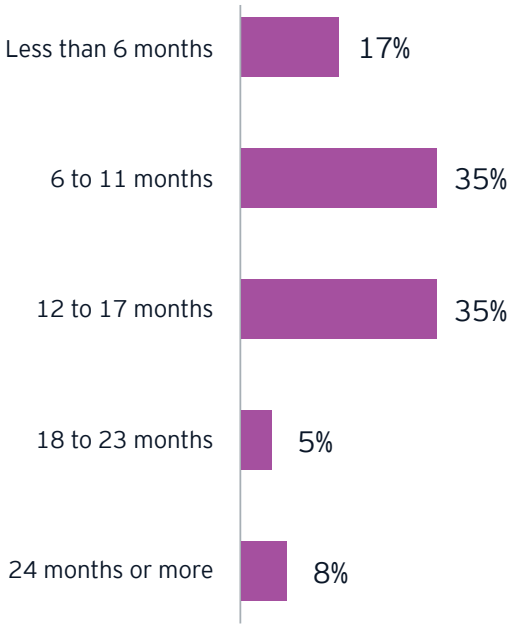
Executives recognize the enormity of the reskilling challenge – they estimate nearly 60% of workers will need to be reskilled to maintain competitive advantage.

43% of the workforce and and will be reskilled



- Can and needs to be reskilled/upskilled, and will be
- Can and needs to be reskilled/upskilled, but won't be
- Does not need to be reskilled or upskilled
- Cannot be reskilled or upskilled

Estimated workforce reskilling timeline for those workers who need to be, can be and will be reskilled or upskilled



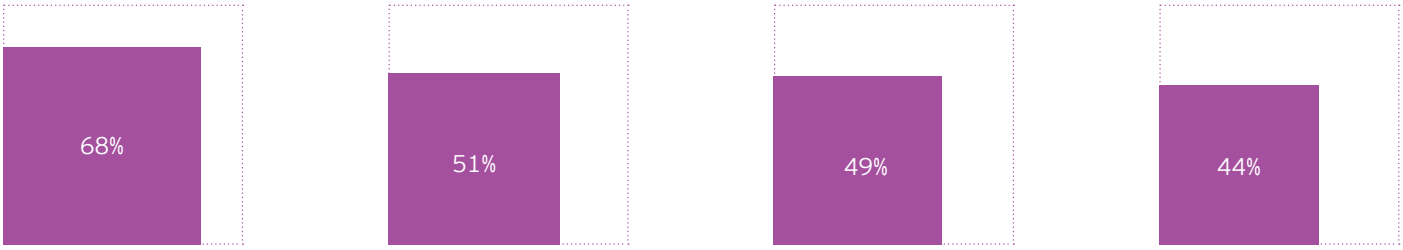
> We're doing a lot to marry business acumen to digital skills to create this worker who understands what the business impact of the technology they're utilizing or proposing is.
>
> **Digital operations executive, integrated oil company**

On average, executives estimate it will take 10 months to reskill or upskill the average worker.

> Culture is at the root of how a corporation operates. It can be institutionalized in the organizational structure that you have at any given point in time, but the organizational structure is more flexible than the culture, right? You can change boxes and wires, but you may not change behaviors and culture. In fact, you will not change behavior and culture by just changing boxes and wires. That's a different problem and needs a different solution.

Global CIO, integrated oil company

Evaluating organizational culture and approach to training



Our organization is good at teaching newcomers about the industry

Our organization is good at teaching in-demand skills

Training is seen as a cost center more than an opportunity for improvement

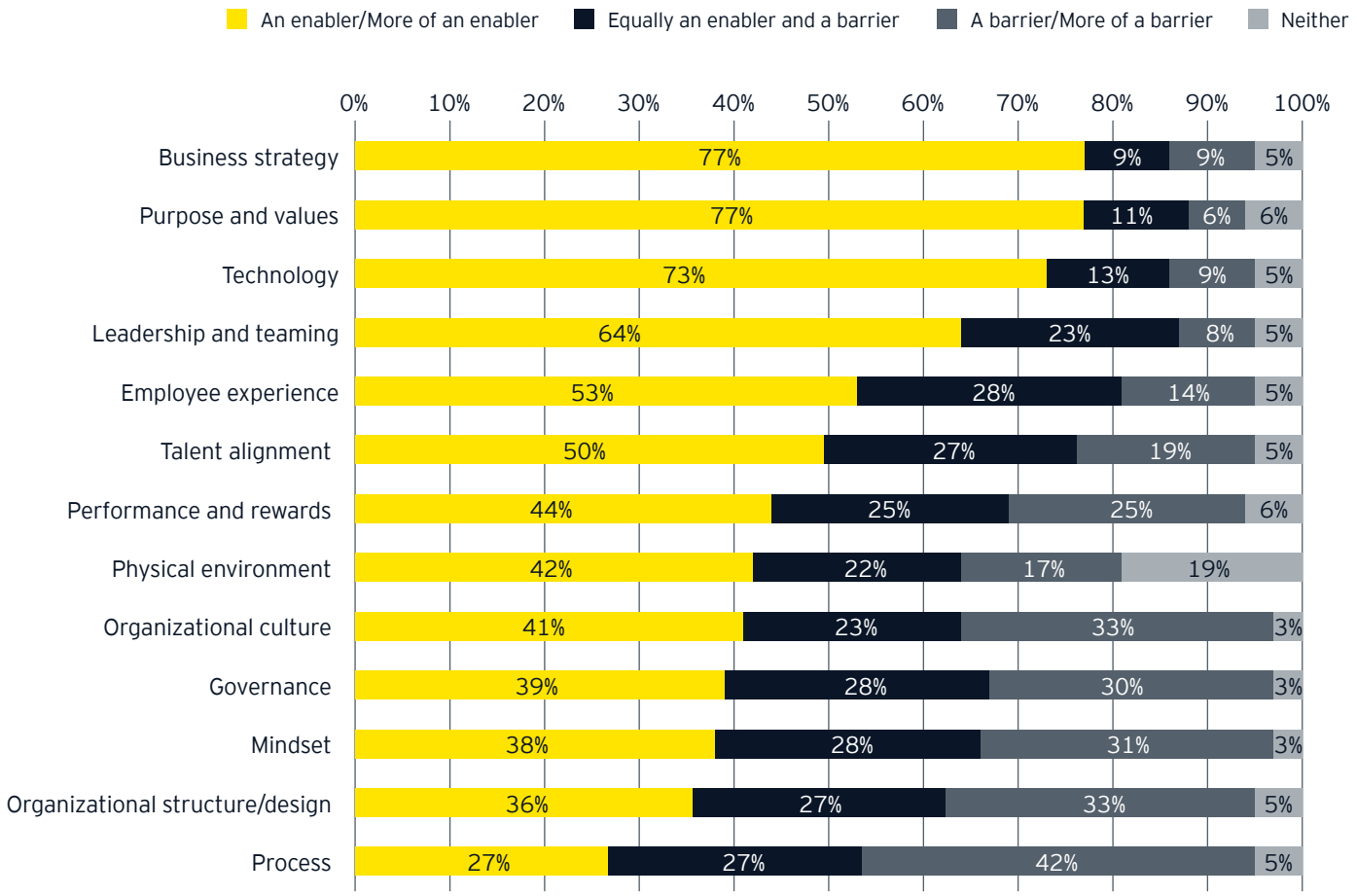
Our senior executives give skills transformation enough attention

EY insight:

Given the evolving nature of technologies and the demand on skills across industries, workers will need a combination of formal training, on-demand microlearning, experiential learning and apprenticeship to build the necessary skills at all levels of the organization. This requires companies to rethink their learning maps and leadership development programs. Building digital fluency cannot be left unplanned, unmanaged or unmonitored.

While executives recognize the importance of reskilling, there are significant organizational barriers still at play, including organizational structure, governance and mindset. To enable the breakthroughs necessary, shared commitment across executive leadership – business, HR, digital – is needed to address these gaps with the urgency necessary to complete an organizational renaissance.

Enablers and barriers of skills development

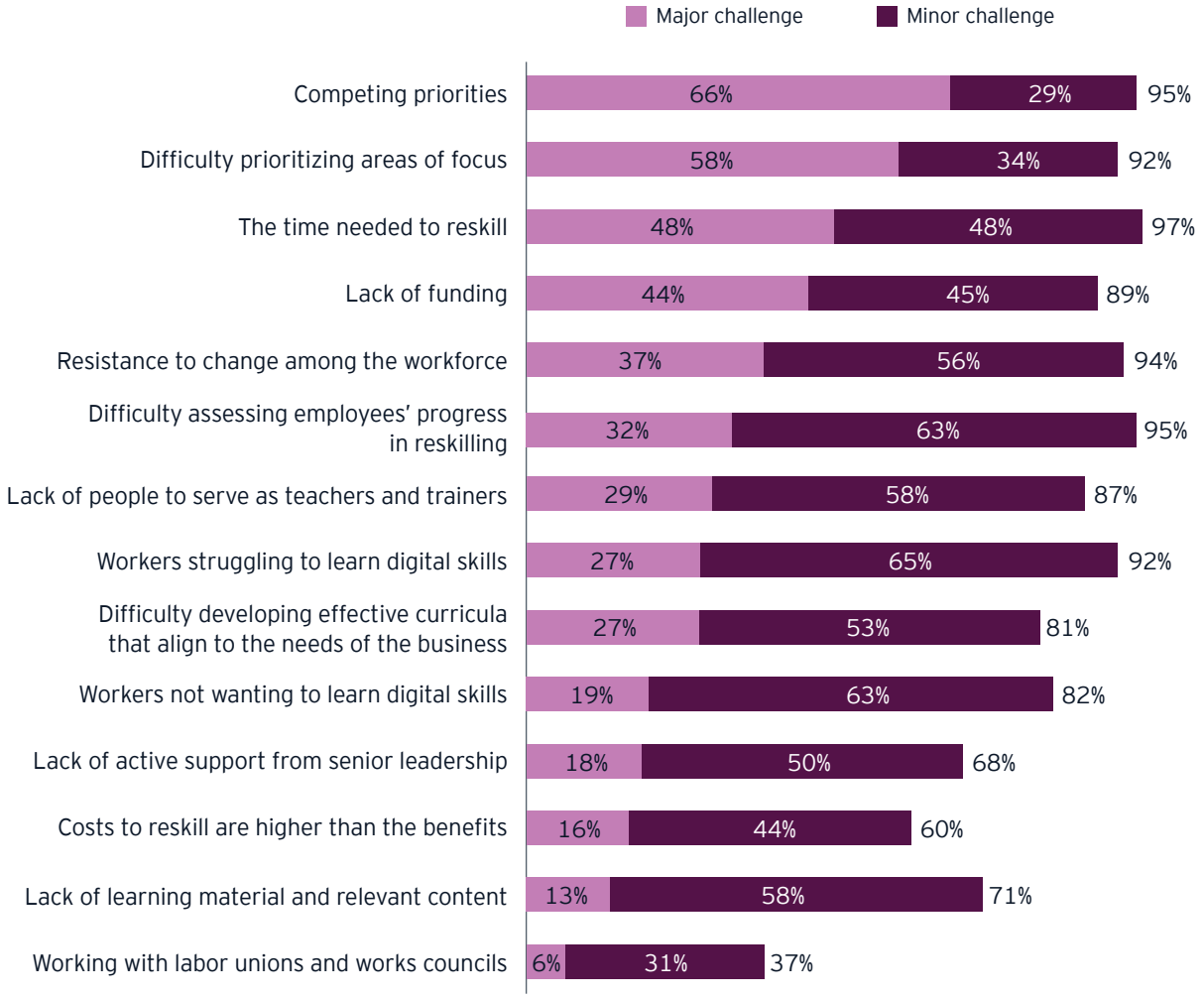


Executives believe "big picture" components like business strategy and purpose will help enable skill development inside their companies, but they acknowledge organizational structure, design and processes as barriers to development. This suggests that while oil and gas companies know what they want to achieve, they are less certain how to do so.

> In order to capitalize, we need everyone to buy in and do the cultural shift that this is where we're going, that the data is driving the decision rather than people having thoughts or feelings about things or just basing it purely on their experience.

Digital operations executive, integrated oil company

Challenges to reskilling



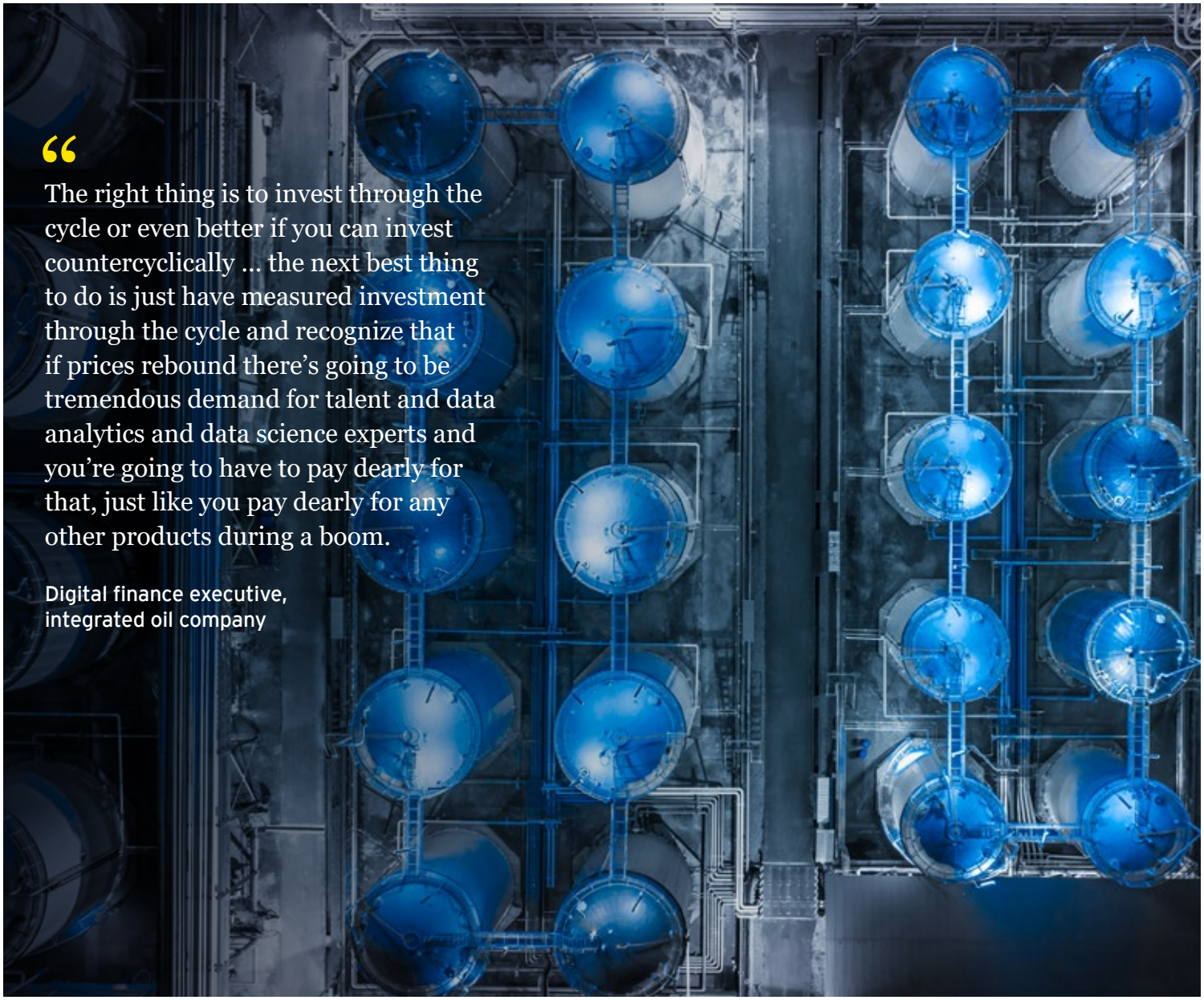
EY insight:

The barriers and challenges uncovered by these executives are revealing. The growing skill gap in oil and gas companies is not simply a learning issue, but it more systemic. Holistic, multilayered plans need to be developed to help organizations move their culture and become digital. Transforming a key company asset – its workforce – so it can continue to generate differentiated value requires leadership commitment, a culture of empowerment and robust planning.

NINE

Investments in talent aren't optional

The skill imbalance may be exacerbated by current market conditions as oil and gas budgets are slashed, workers are furloughed or laid off, and technology investments are viewed as optional. This is a reality likely to persist for several quarters.

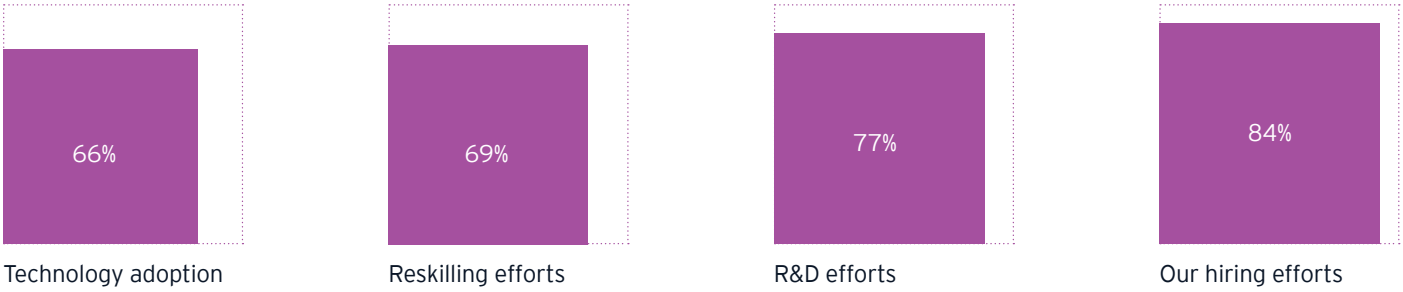


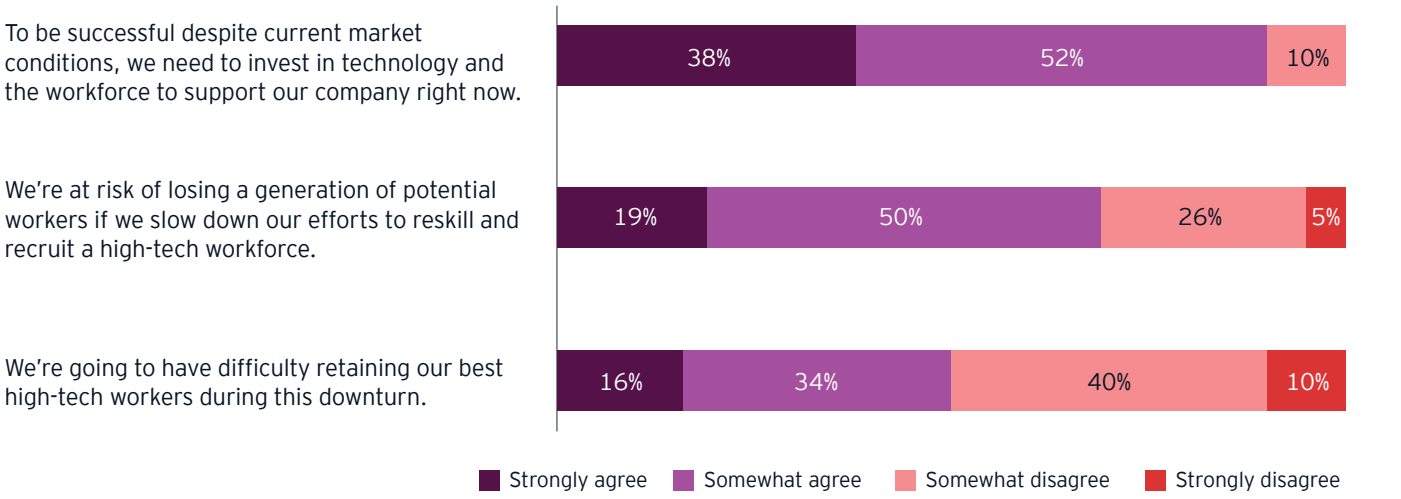
"The right thing is to invest through the cycle or even better if you can invest countercyclically … the next best thing to do is just have measured investment through the cycle and recognize that if prices rebound there's going to be tremendous demand for talent and data analytics and data science experts and you're going to have to pay dearly for that, just like you pay dearly for any other products during a boom.

Digital finance executive,
integrated oil company

> The oil and gas sector is facing its single biggest economic challenge ever … so the appetite for anything that looks like discretionary investment has dried up pretty well completely. However, where there are technologies that can quickly pay back, there is quite a bit of appetite.
>
> **Global CIO, integrated oil company**

Current market conditions will force us to delay …





EY insight:

The role of technology will only accelerate, the volume of data will only grow and competition for talent will only become fiercer. These realities will not wait for market recovery. More importantly, contracting margins and depressed commodity prices will magnify skill gaps, making it more obvious as to which competitive ingredients may be missing. And long-term shifts such as decarbonization are creating new skill imperatives that companies need to start addressing now.

The challenge for oil and gas firms is immediate: find a balance that enables them to invest in their workforce while also addressing market pressures, so the industry does not lose these crucial years and another generation of workers, as it has in past downturns.

TEN

A playbook for survival and success

Oil and gas companies are making significant investments in digital technology. But our survey shows many don't have the workforce skills to realize the fullest return on those investments – or a plan to develop the adaptive and technical skills necessary to do so. To navigate the uncertainty and disruption brought by changing market conditions and COVID-19, companies will need to secure competitive advantage through a well-skilled workforce capable of delivering digital transformation.

Technology and markets are evolving so quickly that the three-year outlook of our survey is better seen as a gauge of the extended present rather than a near future, and the conclusion is obvious: companies must dedicate meaningful resources to reskilling their workforces now. Survival is going to require changes: 92% of the executives we surveyed acknowledged oil and gas companies must change the way they operate if they are going to compete coming out of the current downturn. These changes will require an intentional, coherent approach to workforce skills to maximize the advantage digital technologies have today and for the future of energy. Companies that ignore these realities in favor of only cost cutting may well emerge from the pandemic economy at a substantial disadvantage to more agile competitors.

There isn't a one-size-fits-all playbook to address the workforce challenge when it comes to adopting digital. Being digital rather than doing digital requires a series of intentional interventions – some large, some small – to address the skills, mindset and culture of the workforce.

Regardless of company size or focus on the hydrocarbon life cycle, our data shows obstacles are composed of smaller hurdles at the surface and those embedded more deeply into a company's structures, processes and cultures. These challenges call for proactive, integrated solutions to address the former — creating curricula, identifying partners, building evaluation systems — as well as solutions to overcome the more fundamental and complex, such as business strategy, mindsets, governance and allocation of investment resources. The right strategy will enable execution of digital transformation, which is already difficult under the best of circumstances.

It is no coincidence that the best leaders are those who manage the greatest transformations in trying times. The critical questions executives can ask now to move toward concrete, systemic solutions are as follows:

1. To what extent is my business strategy reliant on digital technologies to get through the pandemic and make growth gains in the subsequent years?
2. Do we have an accurate assessment of our employees and their current skills and development potential, and therefore a sense of how many workers need to be and can be reskilled or upskilled?
3. What are the current maturity, availability and access levels of critical skills within our organization and local market, and which systems are necessary to begin to consistently and accurately measure those levels?
4. Which tools, partnerships and other resources exist or are available to aid in this transformation, and which still need to be identified, forged or acquired?
5. Do we have a comprehensive view of organizational needs and resources to strategically prioritize our efforts and find the balances necessary to position our organization for success now and in the aftermath of the pandemic?

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To help oil and gas companies unlock value in these difficult times, EY has teamed with Microsoft to build a scalable, cloud-based accelerator application known as the EY Digital Energy Enablement Platform, or EY DEEP. EY DEEP helps integrate key processes across the upstream oil and gas value chain with a common data model to allow full extension of the platform across the organization. This extension breaks down silos to integrate reservoir engineering to production planning, well operations to supply chain management, and land management to decommissioning; supports better decision-making; improves efficiency; and reduces time and cost. Read more about the EY DEEP platform at **https://www.ey.com/en_us/oil-gas/ey-deep-digital-energy-enablement-platform**.

To help companies upskill employees for the future world of work, EY has developed the Adaptive Skills Accelerator — a development program that combines a rigorous capability assessment and a custom learner journey connected to a portfolio of EY and curated content that is all supplied through an EY-developed Learning Experience Platform. The application contributes to both organizations and their employees and establishes the foundations for success in the workplace of the future. Read more at: **https://www.ey.com/en_gl/workforce/culture-talent-leadership**.

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