

23rd Annual Global CEO Survey | Trend report

Chemicals trends 2020: Winning strategies for an era of sustainable value chains

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Chemicals trends 2020

In the chemicals sector, value chains are being reconfigured as sustainability, economic and geopolitical trends, new technologies and changing consumer demands are challenging companies' bottom line and future profitability. The coronavirus has added even more complexity, causing significant disruptions to operations and necessitating a reevaluation of complex global supply chains with a focus on risk management. To navigate this uncertainty, chemicals companies will need to redefine their value chains and business models, adapt to the circular economy, capture the opportunities from digital technology, and upskill their people.





A focus on sustainability and new technologies

The expansion of chemical plant construction — fueled by record shale gas production in the US, the commercialisation of crude-to-chemical technologies and lower plant utilisation rates — has created overcapacity in the chemicals sector. Meanwhile, global chemicals production is expected to increase by 2% in 2020, compared to 1.2% in 2019;¹ of course, this expectation is likely to change given the unfolding global recession. This risk of recession, pessimism about growth in China and slumping end markets are creating an era of uncertainty. Concerns about volatile commodity prices and climate change are adding to the unease, as is COVID-19 — the full economic impact of which is still unknown as of this writing.

According to [PwC's 23rd Annual Global CEO Survey](#), 33% of chemicals CEOs are not very confident about their company's prospects for revenue growth in the next 12 months. This is more than quadruple the share (8%) who responded similarly in last year's survey. And this was before the first cases of coronavirus made headlines — the survey was conducted in September and October of 2019.

As they weigh their options, chemicals leaders will need to consider shifting preferences among consumers who are increasingly focussed on the environmental impact of the products they use. One manifestation of this trend is the growing global movement to ban single-use plastic straws, utensils, bags and bottles. The EU, India and China have all announced bans that will take effect over the next few years, joining other territories that have already taken similar steps.²

On the one hand, such regulations present significant risks for the chemicals sector. Plastic bans and recycling policies could reduce petrochemical demand growth in the future.³ Companies' investments in decarbonisation to reduce their carbon footprint and focus on eco-ethical products will also put demand at risk across various chemical products. The chemicals sector is currently a major contributor to global emissions.

But on the other hand, substantial opportunities will emerge as a result of the development of new alternative materials, such as bio-based polymers, and engagement in the recycling economy. In fact, the top opportunity (identified by 58% of respondents) that chemicals CEOs say they will be prioritising or investing in over the next 12 months is sustainability and the circular economy (see Exhibit 1).

Exhibit 1

Chemicals CEOs see opportunity in the circular economy

Sustainability/circular economy

Alternative material sources and processes (e.g., bio-based, renewable, ChemCycling)

Digital operations and related technologies (e.g., sensors, digital twin, drones)

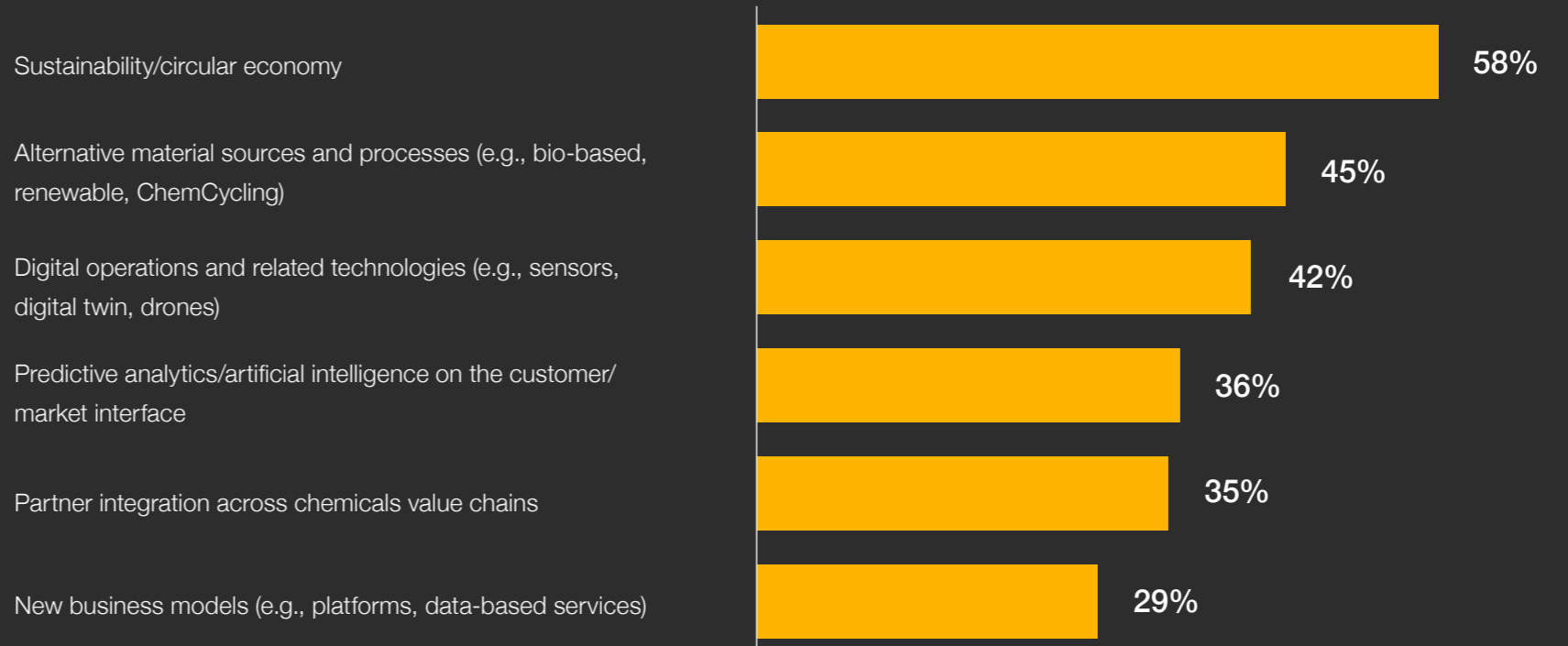
Predictive analytics/artificial intelligence on the customer/market interface

Partner integration across chemicals value chains

New business models (e.g., platforms, data-based services)

Question

Which of the following opportunities in the chemicals industry will you be prioritising and/or investing in over the next 12 months?



Source: PwC, 23rd Annual Global CEO Survey
 Base: Chemicals respondents (2020=55)

Substantial opportunities will emerge as a result of the development of new alternative materials and engagement in the circular economy.

This is reflected in PwC's Global CEO Survey data: 38% of chemicals CEOs say there will be significant new product and service opportunities related to climate change. But significantly, only 15% have assessed the potential transition risks. Indeed, while chemicals companies have started to adopt sustainable development goals to define their priorities, many have no clear targets, and across the industry there doesn't exist a clear-cut framework for measuring sustainability and non-financials.

Another key trend will be the adoption of new technologies. Some chemicals companies have

improved operational efficiencies through the adept use of technologies, such as IoT sensors that track an end product's performance, the automation of back-end processes, and using blockchain technology to enable supply chain transparency and product traceability and the application and time-specific delivery of chemicals. To gain the full benefit of these and other technological developments, companies will need to invest in people and their capabilities. Thus far, the chemicals sector has struggled when it comes to upskilling the existing workforce. But upskilling is essential to drive future growth.



How does a company succeed in uncertainty?

The coronavirus has increased the economic challenges that the chemicals industry was already experiencing during the 12 to 18 months before the outbreak. Although crisis management is evolving on a daily basis, executives are also thinking about mid- and long-term measures.

Many chemicals company CEOs understand the challenges facing their industry, but may not be fully prepared to make the changes needed to adapt to this new era. While they are fairly confident in their ability to allocate their resources strategically in general, only a few attribute agility to their ability to capture emerging opportunities (see Exhibit 2).

Yet to succeed in a time of uncertainty and rapid change, it's essential to stay agile — to adjust portfolios, extend value chains upstream and/or downstream, keep operations flexible, shed assets and capture growth opportunities.

Exhibit 2

Chemicals CEOs are focussed on resource allocation but not agility

We allocate our resources strategically (i.e., away from what is nice to have towards what fuels our competitive advantage)

We have a set of differentiating capabilities that set us apart from our competitors

We have a clear vision of how we create value for our customers

We bring something unique to our customers

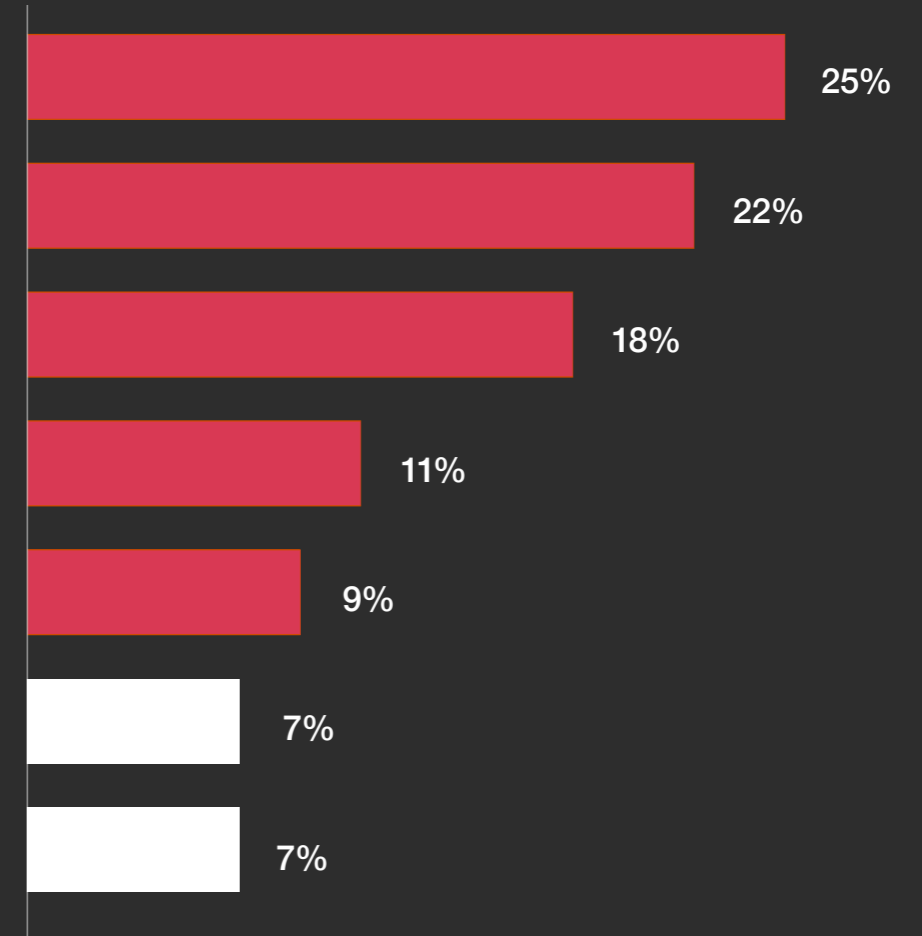
We are able to attract, retain and develop talent in those areas that are most important for us to win

We are agile and pursue new opportunities that emerge

We pursue only those strategic opportunities that we believe we have the ability to win

Question

Which of the following statements do you believe most strongly enables your strategic goals? (Showing percent ranked first.)



Source: PwC, 23rd Annual Global CEO Survey
 Base: Chemicals respondents (2020=55)



Transform supply chains

Too many companies still are managing their business with a strong lens on operations, driven by utilisation, output and quality, when the investment climate is changing all around them.

As a result of the COVID-19 global health emergency, supply chain resilience and agility will become an even higher priority. The outbreak is disrupting transportation and production, and it reveals the vulnerability of complex global supply chains.

Chemicals companies will need to rethink their global integrated supply chains and develop more agile and regional ecosystem-oriented value chains driven by two major considerations. First, they'll need to reevaluate complex global supply chains not only based on cost efficiency but also on risk mitigation, and consider relocating at least part of value creation to the Western hemisphere (especially in critical supplies like active pharmaceutical ingredients, or APIs). And second, in line with the structural changes of the industry and its customer needs, the future will require fewer asset-backed investments and more new products and services geared towards digital-enabled value chains.

Capture value from sustainability

The chemicals industry has the potential to benefit financially from the growth of the circular economy, since downstream and customer industries that embrace such strategies in the EU are expected to increase by 26% the demand for basic chemicals and intermediates.⁴ However, the question not yet answered for many companies is how to create value from those opportunities in an ecosystem that is likely to change fundamentally. Chemicals companies need to become much more customer- and application-centric, and collaborate with other parties to develop and deliver innovative products and solutions that address customer and consumer needs.

Most chemicals companies face the challenge of getting a return on digital and sustainability initiatives — since material or process alternatives are often more costly to develop and produce. Doing so will require the industry to redefine value in the broader value chain and to develop new products, services and solutions.

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Future sustainability solutions will be enabled by digitisation and new technologies, but here the chemicals sector has not kept pace with other industries. Initial digitisation efforts have focussed on specific areas, such as supply chain and production, in order to improve the bottom line, rather than taking a more holistic approach that better prepares the industry for the future, according to PwC Strategy&'s [2019 Digital Operations study for chemicals](#).

Become a purpose-led organisation

Finally, chemicals companies need to look beyond their current playing fields, engage in partnership and alliances to access capabilities they don't possess, and thus become part of shaping new ecosystems. To do so, chemicals companies need to define their purpose and take a longer-term view. This becomes even more critical in today's uncertain business environment.

They need to identify the differentiated capabilities that will help them win in the market, rather than chasing the market growth that all their competitors are seeing as well. And that requires adjusting their strategic planning. Instead of the traditional three- to five-year strategy, they'll need to look at the ten-year horizon — while at the same time staying nimble enough to take shorter strategic sprints. These steps will enable sustained organic growth.



A call to action

To succeed in this era, chemicals companies need to take advantage of new opportunities, reconfigure their business models and redefine themselves as providers of solutions. The following are the six key steps that company leaders should take.



1. Make clear and distinct choices

For chemicals companies, innovation needs to focus not only on products, processes and services but also on smart choices about where to invest and how to use new tools and software in the most effective way. For the latter, this means using technology not just to upgrade to a new system, but also to incorporate it into the goals of the organisation and as part of a larger focus on transforming workplace culture. To make the right decisions, it's key for chemicals companies to understand the value they can create downstream, both financial and non-financial (in terms of sustainability, the circular economy and decarbonisation).

Solutions-driven chemicals companies will also need to better understand their customers. That might mean gaining insight into a wide range of industries and issues — from automotive and

aerospace design to packaging sustainability trends and consumer preferences regarding the biodegradability of products. This knowledge depends on getting data from different players in the supply chain, from the formulators who use their product to the retailers who sell the end products to the end users themselves. Innovations in materials for 3D printing, digital supply chains for circular value streams and industrial biotechnology present great opportunities for chemicals companies to develop new materials for the industries they serve.

Companies focussing on more asset-heavy parts of the sector will also need to leverage data and market insights, looking at supply/demand balances, capacity situations and global pricing trends.

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2. Prepare to scale up across a range of industries and types of customers

Scaling up will require a data-driven micro-segment business model, which is unfamiliar to most chemicals companies that are used to big volumes and large customers. For example, in agrochemicals, this could mean focussing on what a farmer needs locally — optimising crops, fertilisers, pesticides and fungicides, and improving the water supply — with technologies and platforms that can be scaled up globally.

As they prepare to scale up, chemicals companies need to be transparent about how volatility is impacting the balance sheet. That means being clear about the variability in the cost of raw materials and using more advanced predictive pricing and market models to see how costs are changing and what the risks are in their value chain from upstream to downstream.



3. Cut costs with growth in mind

Companies need to seize every opportunity for growth and profitability by transforming their operations. According to PwC's [Fit for Growth](#) platform, that involves creating a more sustainable cost base, reinvesting in a few priority growth areas and cutting elsewhere, treating spending as an investment, and allocating costs in service to your company's strategy.

There is a need for a continued focus on operational efficiency, reducing complexity, managing commodity price volatility, taking out cost, and freeing up cash in the short term to invest in the capabilities and operating model needed for the future. Leaders will also need to consider these decisions in light of the [impact](#) of the novel coronavirus on their business.





4. Be open to different types of innovation and partnerships

When seeking out collaborations, company leaders need a clear understanding of what capabilities each partner brings to the table and how technology and data analysis can be leveraged to achieve certain goals — from transparency on value chains (tracing materials) to achieving competitive cost positions (for example, when assessing performance and cost ratio of virgin plastic compared to recycled plastic).

One way this could manifest itself will be chemicals companies partnering with competitors and customers on sustainability initiatives,⁵ such as collaborating on research into chemical-recycling techniques. For example, BASF launched the ChemCycling project, which seeks to thermochemically recycle plastic waste and produce hydrocarbon feedstocks to use in its facilities. ChemCycling is, next to physical

recycling methods, key to a circular economy and requires the chemicals sector to look to the ecosystem of converting used materials to be used as raw materials for processing again. Although ChemCycling still needs to be improved to be scalable at a competitive cost and performance level, the industry can create a business out of this as well. These new ecosystems will require more service, more logistics, more customisation — and a clear choice on where to play in this new economy.

Another collaboration, the Alliance to End Plastic Waste, has grown to more than 40 companies across the entire value chain — for instance, BASF, Braskem, Clariant, Shell, ExxonMobil, LyondellBasell and Procter & Gamble. The group has committed to closing major rivers to plastics waste and funding cleanup projects in the oceans.

5. See sustainability as a growth opportunity

When it comes to chemical processing, embracing sustainability involves reducing your own footprint and emissions. But chemicals companies will also need to assess their indirect effects further downstream. For example, if you are providing a plastic that's used by a toy company, how dirty is it? What if you provide a material for additive manufacturing — how does that impact the downstream eco footprint? How can the carbon footprint be reduced via supply chain adjustments, such as avoiding production and transportation steps by printing parts at the place of use? And across the value chain, how much money can be captured, and what are the non-financial benefits of social and ecological impacts?

Chemicals can generate growth and revenue via new business models that share the impact benefits. For example, a hydrogen-based economy could lead to the decarbonisation of the whole energy sector, which also impacts the chemicals

industry. For that to happen, green hydrogen needs to become a primary source of energy, because that could lead to the sustainable sourcing of key raw materials for chemicals through hydrogen electrolysis based on renewable power. Chemicals can drive improvements in the energy efficiency of downstream customers' processes, thus acting as a catalyst to make sustainability more feasible and affordable at scale for the entire energy sector.

Other opportunities for the chemicals industry include innovations that improve the reuse and recycling of plastics; technologies that help extend the lifespan of molecules used in chemicals by breaking down discarded materials into their basic chemical building blocks and repurposing them for new uses and products; and new materials used in sustainable products (such as plastics and polymer composites used in lightweight vehicles). For example, chemical recycling could lead to 'molecule leasing,' in which the producer retains ownership while earning money when the molecule is used by customers.



6. Build an effective upskilling programme to prepare your workforce for the future

The skill development challenge is particularly pronounced in the chemicals sector, where many scientists and engineers have very specialised capabilities and are often not as adept at understanding the needs of the customer. PwC's Global CEO Survey revealed that 33% of CEOs in the chemicals sector are extremely concerned about the availability of key skills.

Only 20% of CEOs in the chemicals sector reported significant progress in establishing an upskilling programme that develops a mix of soft, technical and digital skills, and only 18% reported significant progress in defining the skills needed to drive their future growth strategy. The biggest challenge they believe they face in their efforts: the ability of employees to learn new skills needed for the future (see Exhibit 3).

Exhibit 3

Teaching employees new skills remains a challenge in the chemicals sector

Ability of employees to learn new skills needed for the future

Retaining employees who have been upskilled

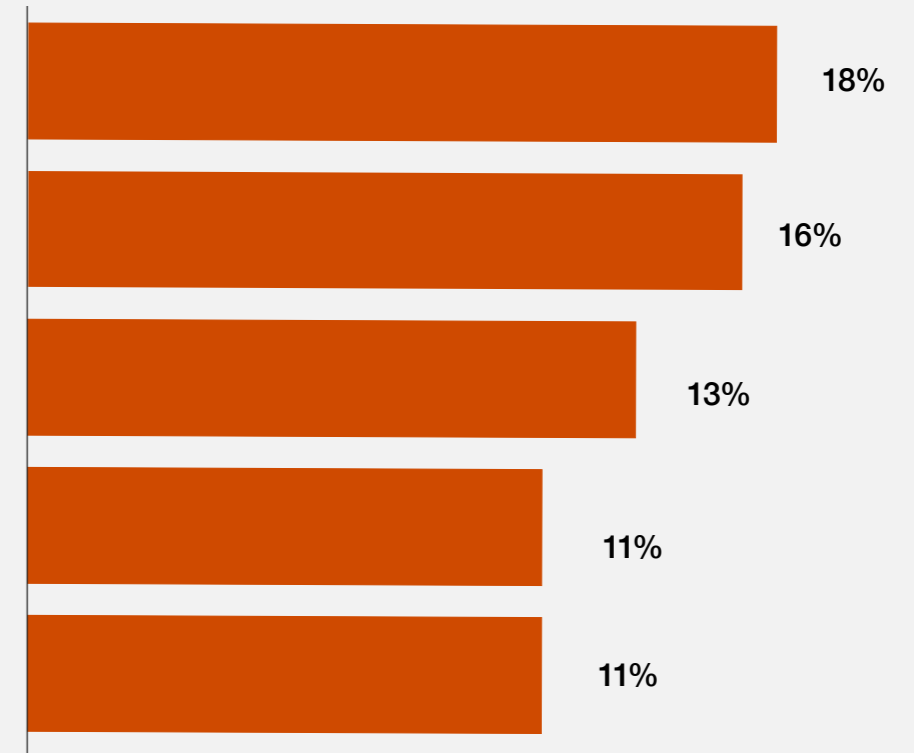
Motivating or incentivising employees to learn and apply their learning

Defining the skills we should build

A lack of resources to conduct the upskilling programmes we need

Question

Please rank the three greatest challenges your organisation currently faces in its upskilling efforts. (Showing percent ranked first; top five challenges displayed.)



Source: PwC, 23rd Annual Global CEO Survey
Base: Chemicals respondents (2020=55)

Upskilling involves identifying the knowledge, skills and experience that will be most valuable in the future for new and transformed roles. An effective approach involves recognising skills gaps and mismatches, inspiring workers to take action today and to continue adapting, creating programmes to develop skills that engage participants, and assessing the effectiveness of the programme. It's also key to upskill managers and leaders, many of whom were trained in a more traditional educational environment.

Designing and executing requires a collaborative approach that brings together units across the company, including human resources, IT, finance, innovation and operations. Leaders will need to assess and identify skills gaps and mismatches and compare workforce capabilities and needs. They will need to ensure that there are rewards and incentives for participants, so that they see upskilling as a transformational personal journey towards becoming an infinite learner.⁶ And leaders will need to develop comprehensive systems to track the progress of programme participants.⁷



Conclusion



We know that many CEOs see the challenges ahead, and are asking themselves how best to confront them. In summary, they should:

- Base product development and investment decisions on customer and market insight
- Adopt a micro-segment business model
- Develop partnerships to build new ecosystems
- Identify ways to increase sustainability
- Upskill to ensure a future-ready workforce.

Too often, chemicals companies approach change as a business challenge or technology problem and forget the critical skills and behaviours that are needed to realise that change.⁸

The steps we've outlined will get leaders started, enabling them to navigate today's uncertainty, deliver for both stakeholders and customers, and position themselves as drivers of innovation in the future.

End notes

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About PwC's 23rd Annual Global CEO Survey

PwC surveyed 3,501 CEOs in 83 territories in September and October 2019, which included 55 CEOs from chemicals companies. Of the 55 CEOs whose responses were used for the chemicals figures:

- 40% of their organisations had revenues of US\$1bn or more
- 31% of their organisations had revenues between US\$100m and US\$1bn
- 24% of their organisations had revenues of up to US\$100m
- 51% of their organisations were privately owned.

Notes

Not all figures add up to 100% as a result of rounding percentages and excluding 'neither/nor' and 'don't know' responses from exhibits.

The sample of 1,581 CEOs used for the global figures in this report are weighted by national GDP to ensure that CEOs' views are fairly represented across all major regions.

We conducted in-depth, face-to-face interviews with CEOs from six regions. Extensive transcripts can be found on our website at <https://www.strategy-business.com/inside-the-mind-of-the-ceo>.

The research was undertaken by PwC Research, our global centre of excellence for primary research and evidence-based consulting services: www.pwc.co.uk/pwcresearch.

