

THE EUROPEAN TECHNOLOGY INDEX 2020

Uncertainty drives tech change



Executive summary

Tech industry resilient to COVID-19 impacts

Introduction

The health of the population, the environment and the economy have significant influence on the findings of the fifth edition of the European Technology Index, our acclaimed survey and study series about perceptions and attitudes in European technology growth.

Only 4% of respondents think the tech industry is doing enough to address sustainability concerns (see page 8).

Our report also reveals an **impressive resilience to the economic impact of COVID-19**, with just 1% of companies looking at permanent layoffs and 1% facing insolvency (see page 6).









Brexit – firmly back on the agenda – is viewed less optimistically: only 10% of respondents believe the impact will be positive – and 48% think it'll be negative – over the next two to five years (see page 18).

In unprecedented times, with governments intervening to minimize the impact of COVID-19, and the subsequent economic fallout, our report highlights changing attitudes to key market developments, new technology, and the regulatory landscape.

As in previous years, we have spoken to 350 senior business executives across Europe, in the fields of technology, financial services and the public sector, who work in companies with annual turnovers from EUR10 million to over EUR10 billion.

Yet again, this has generated some intriguing insights on general trends across sectors and technologies, including the effect of COVID-19. Data was collected in April and May 2020, during the height of the lockdown in most countries as business and government grappled with pandemic strategies, providing a unique and fascinating backdrop to our findings.

Our
2020
report focuses on
the following topics:

-  **Acquisition of external businesses**
-  **Cybersecurity**
-  **5G**
-  **AI/robotics**
-  **Brexit**
-  **Fintech**
-  **Data monetization**
-  **Internet of Things/ connectivity**

See the Appendix for details of the research sampling and methodology

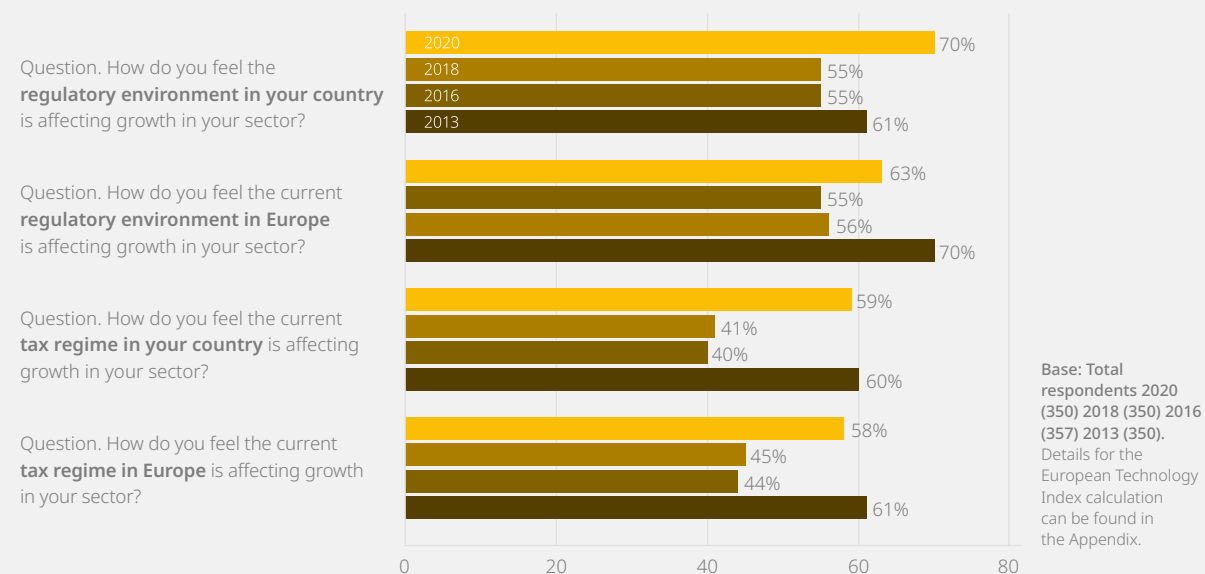
Executive summary continued

The European Technology Index: (Overall comparison) Disruption is the new normal

This edition of the European Technology Index is set against a perfect-storm backdrop of Brexit confirmation and the COVID-19 pandemic. It's perhaps not surprising, then, that the results show a marked and material deviation from the 2018 findings.

Given the unprecedented level of state intervention seen in the short term (which also seems likely to be required over the medium to long term), respondents' views on the impact of regulation and the tax regime have changed: the index score for the impact of the regulatory environment in particular has rocketed from 55 (in both 2016 and 2018) to 70 (fig. 1). Clearly, the expectation is that governments will need to maintain a more active level of involvement in business affairs to restimulate their economies. The tech sector will be an obvious target for growth.

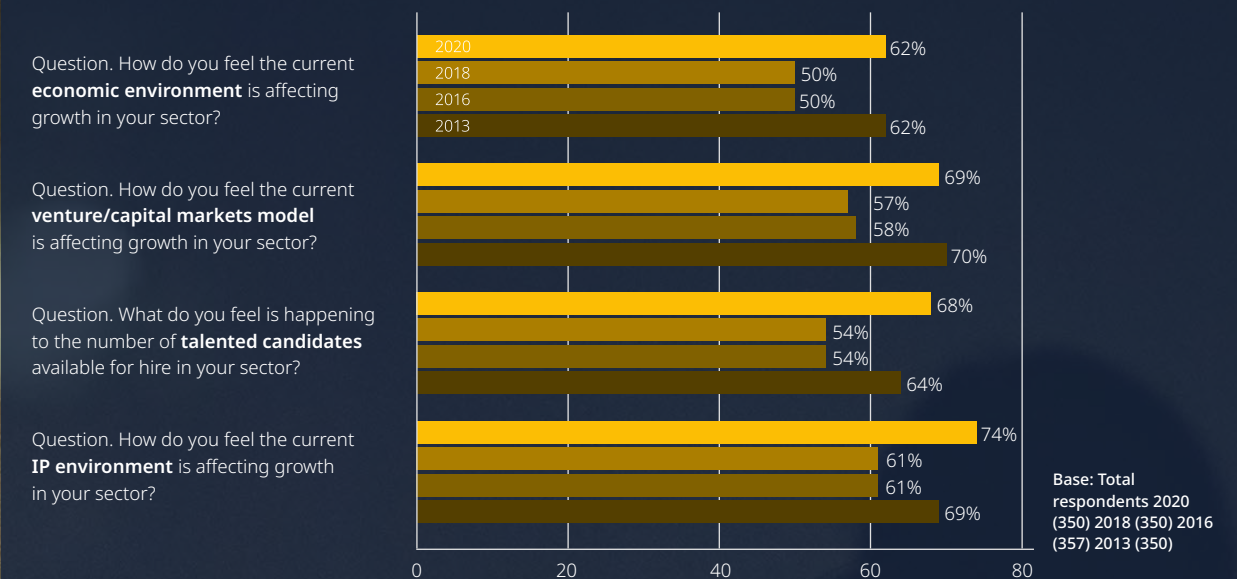
Fig 1.
Tech scores 2020 v 2018 v 2016 v 2013
8 questions are used to create the overall tech score - Graph 1 of 2



But not all the findings are solely the result of COVID-19 or Brexit-focused sentiment. There are wider forces at play in the technology sector, not least regarding the trade war between East and West. This is perhaps reflected in the significant increase in the index score relating to the impact of the IP environment on tech sector growth, as seen, for example, in recent news stories relating to the UK Government's decision to ban the purchase of new Huawei 5G equipment from next year and forcing the removal of all Huawei equipment from 5G networks by 2027 and China-based investors appearing to asset strip IP-related materials from companies they've invested in.*

Fig 2.
Tech scores 2020 v 2018 v 2016 v 2013

8 questions are used to create the overall tech score - Graph 2 of 2

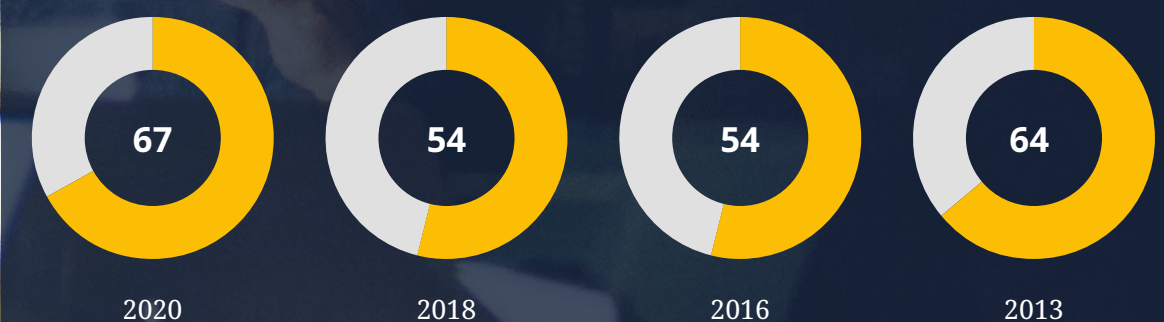


The overall index score now stands at 67 (fig. 3), after a period of stability across the 2016 and 2018 results (both with index scores of 54), and is the highest score since the European Technology Index began. The technology sector is, of course, not exempt from the challenges of the current crisis, and it remains to be seen whether the sector can be the engine for recovery.

Governments have acted swiftly to underpin European economies going forward, even if there's a short-term hit, and stock markets have shown some signs of recovery, albeit fragile as the fluctuation of Coronavirus (COVID-19) cases continues to affect market confidence.

Fig 3.
Overall tech score

Note that the calculation changed in 2018, due to changes in the questions making up the index.



Special section – COVID-19

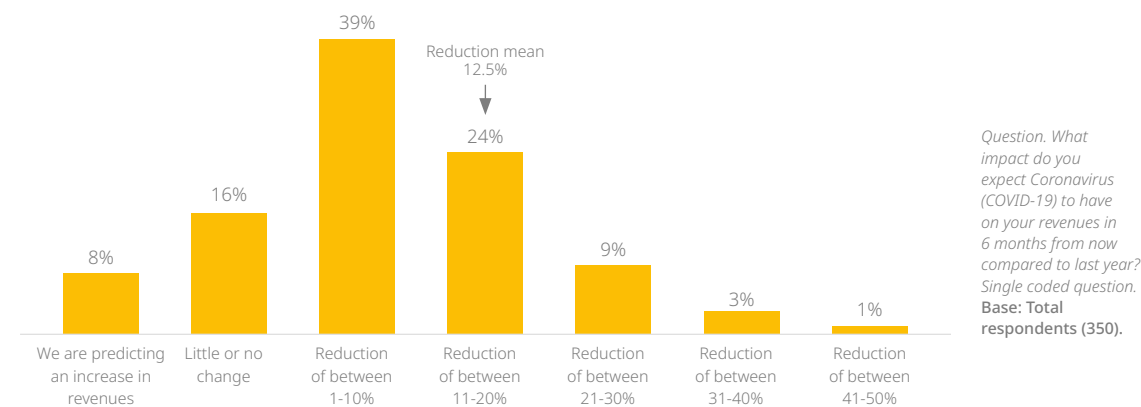
At the start of 2020, few would have predicted what unfolded in the early months of the year, and that we would see major disruptions and changes in how organizations work, manage their people and serve their customers. Putting an economy on hold for any amount of time is bound to have an impact across all industries, but greater on some than others. The tech sector is not immune, but has suffered far less than the retail, tourism, travel and entertainment sectors.

The tech sector has had a few winners in the otherwise bleak COVID-19 economic climate, with high-profile global e-commerce, cloud and communications technology brands benefiting from the move to remote working and lockdown living, and telecommunications companies likewise seeing increased demand for their services.

Many other tech companies have not been so fortunate, however. It's perhaps not surprising that the majority view from respondents on the short-term financial outlook for what equates to Q2 and the early part of Q3 2020 was negative, with 76% of respondents predicting at least some revenue downturn (the average being 12.5% in this group).

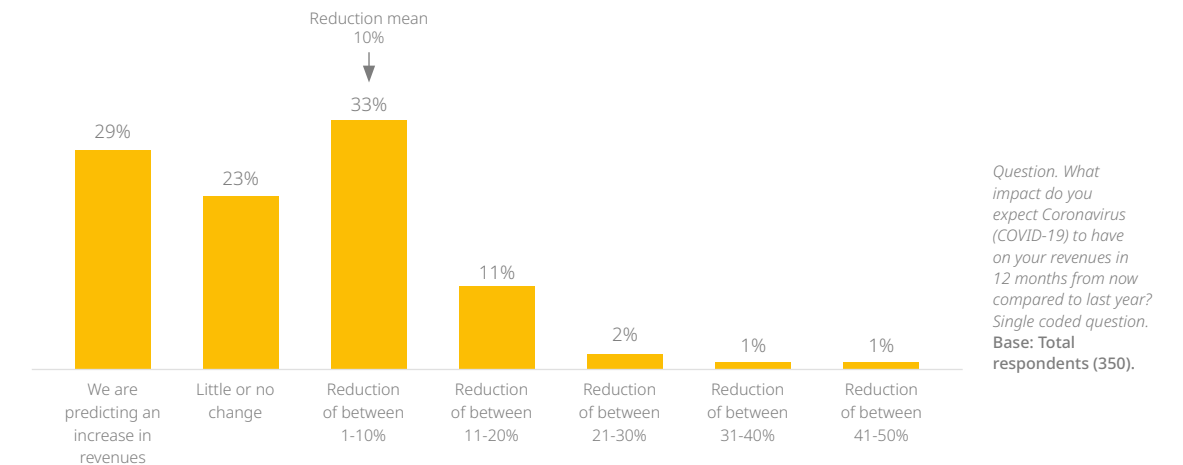
Just short of one in 10 companies (16% in Eastern Europe and only 5% in Western Europe) are predicting an increase in revenues, while 16% think revenues will remain the same. 13% of organizations (slightly higher at 15% in Western Europe and 16% in financial services firms) will see a greater than 20% reduction in income in the short term (fig. 4).

Fig 4.
Impact of Coronavirus on revenue in next 6 months



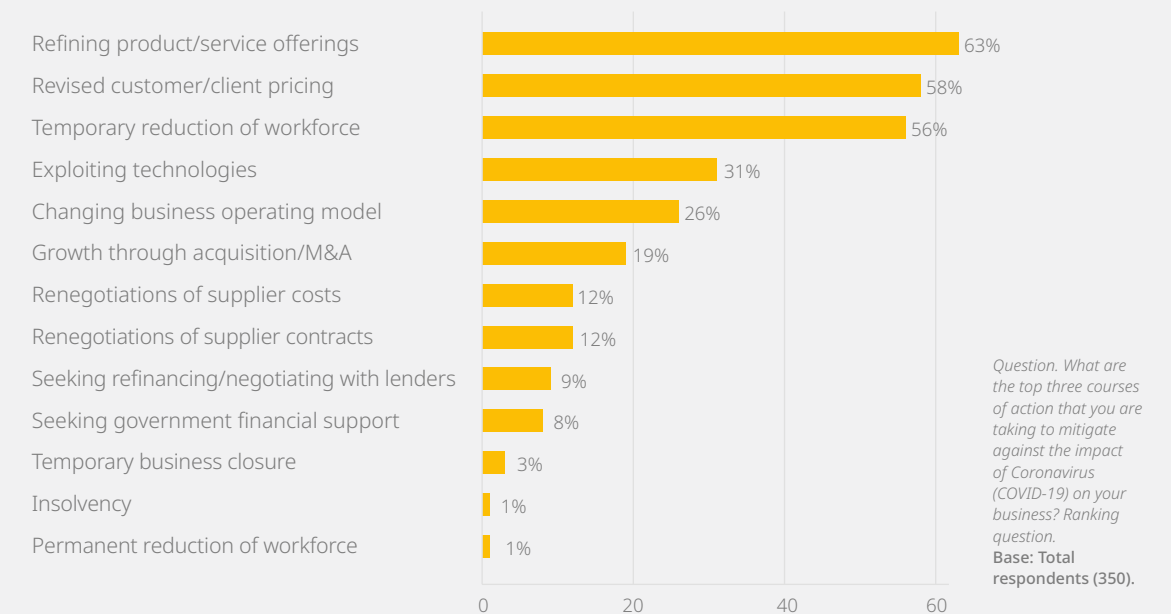
The sector is robust and fast-moving however, so the figures show a belief in its ability to bounce back. When looking at the next 12 months, 52% of respondents predicted either a flat position or revenue growth, and a further 33% expect a more modest decline in the 1% to 10% range (fig. 5). While not perhaps indicating the kind of V-shaped recovery that optimists may have hoped for, this does at least indicate a belief that it won't be too long before things improve.

Fig 5.
Impact of Coronavirus on revenue in next 12 months



Aside from company revenues, the supply side is also going to be significantly affected in the next 12 months with 77% of those taking part predicting at least a moderate negative impact.

Fig 6.
Actions being taken to mitigate impact on the business



Looking at the steps being taken to mitigate the impact of COVID-19, three strategies dominate: refining service and product offerings, revising customer pricing, and undertaking temporary reductions in workforces (fig. 6).

Equally, it's positive that more draconian measures such as permanent workforce reductions and insolvencies saw a negligible response (each at 1%). Clearly, there would have been a marked difference had the same questions been posed to companies in some other sectors forecast to face more severe headwinds.

Tech industry and sustainability

Institutional investors are increasingly attracted to businesses with a clear environmental, social and governance focus, and globally, many companies, organizations and governments are driving change in sustainability – especially those in the technology sector. Our survey indicates an increasing awareness and commitment to addressing environmental issues, with companies self-imposing targets and taking measurable steps to improve.

Only 4% of companies think the tech industry is doing enough to address sustainability concerns. But respondents have voiced an encouraging passion for change:

- 61% of companies (and, unsurprisingly, 77% in the public sector) believe the industry should be investing more in energy-efficient technologies
- 52% say there should be greater demand for supply chain accountability
- 51% believe companies should be working to becoming fully carbon-neutral by 2030

The potential for technology to contribute to solving environmental issues outweighs the unintended negative impacts it may cause (e.g. increase of carbon emissions, rising rates of production and consumption). Innovation in data generation and analytics, coupled with AI, advanced robotics and cloud computing, have opened the door to many positive outcomes for sustainability.



National security

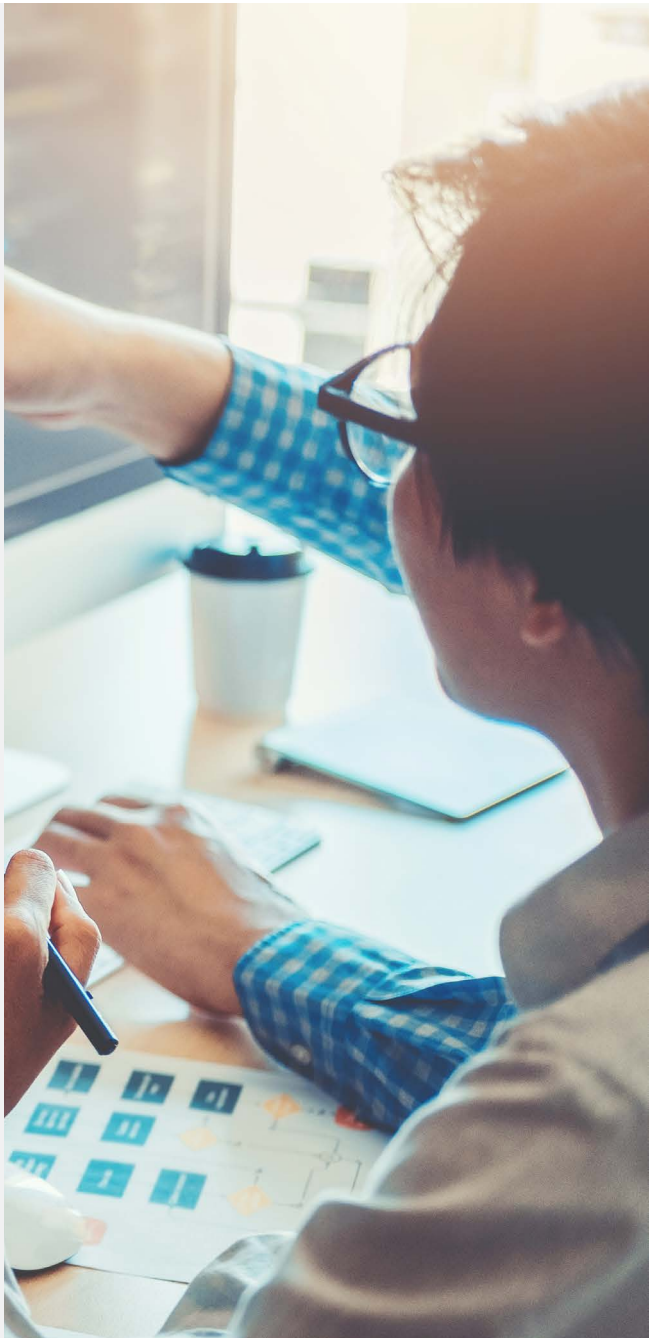
This year, for the first time, we asked a direct question regarding national security. This was prompted by a host of global factors that readers will be familiar with, such as tensions between the US and China and North Korea (evidenced by media commentary about President Trump’s escalating rhetoric and social media approach), the perceived impact of Brexit for the EU and the UK and for new bilateral trade deals, and trends towards protectionism in purchasing technology for national security purposes.

Many nations have for many years had a form of national security exemption applicable to public sector purchasing and some nations, such as China, Brazil and Russia, have practices and laws that make it hard for overseas suppliers to win market share. Our work for the European Commission on a recent report – on access of EU goods and services to public procurement markets of third countries – highlighted this disconnect in relation to possible accession countries for the GPA (Government Procurement Agreement, part of the World Trade Organization’s remit).

Added to this, widespread media coverage regarding threat actors and the increasing abundance of commercial and personal data have influenced the approaches of governments to their buying decisions of foreign technology.


This is reflected in our findings. 65% of respondents are seeking tighter controls (more regulation), particularly in the field of infrastructure, notwithstanding the arrival of the NIS Directive in 2016 on the security of network and information systems.

The results also show two specific China-directed recommendations from our respondents: a ban on Chinese 5G core services (46%) and a total ban on the involvement of Chinese manufacturers (39%). These results clearly show the tensions that currently exist between the West and China, and perhaps reflect the general unease about ongoing trading prospects, given the pandemic and the likelihood of a global recession.




Topical issues


For the European Technology Index 2020, we've replaced some past topics (cloud computing, talent scarcity and digital transformation) with new technologies and developments, including:




Acquisition of external businesses



5G




Brexit




Data monetization


Our traditional trend technologies remain:




Cybersecurity, which many may have thought would be maturing, is still in the top three



AI/robotics, which has seen a step change in interest and potential



Fintech, which is showing signs of maturing but still driving business benefit for tech-sector companies



IoT/connectivity, which has become a major area of opportunity for companies in 2020

Cited by 92% as offering the most potential for business growth, there's a clear sense that IoT/connectivity (p. 32) has spiked in importance because of restrictions on movement due to COVID-19, which have highlighted the importance of businesses and consumers being able to remotely access personnel, services and information, and to communicate remotely (fig. 7).

The pandemic has accelerated the process of digitization and connectivity by forcing businesses to either get better connected internally and across their supply chain – and with customers – or else fail. In addition to the improvement of current customer experience and business processes, there is a myriad of services that did not exist until IoT/connectivity improved, such as Peloton, Strava, and online gaming.

Unsurprisingly, cybersecurity (p. 23) is also in the top three opportunities for the most potential business growth, cited by 87% of respondents. The two main drivers are:

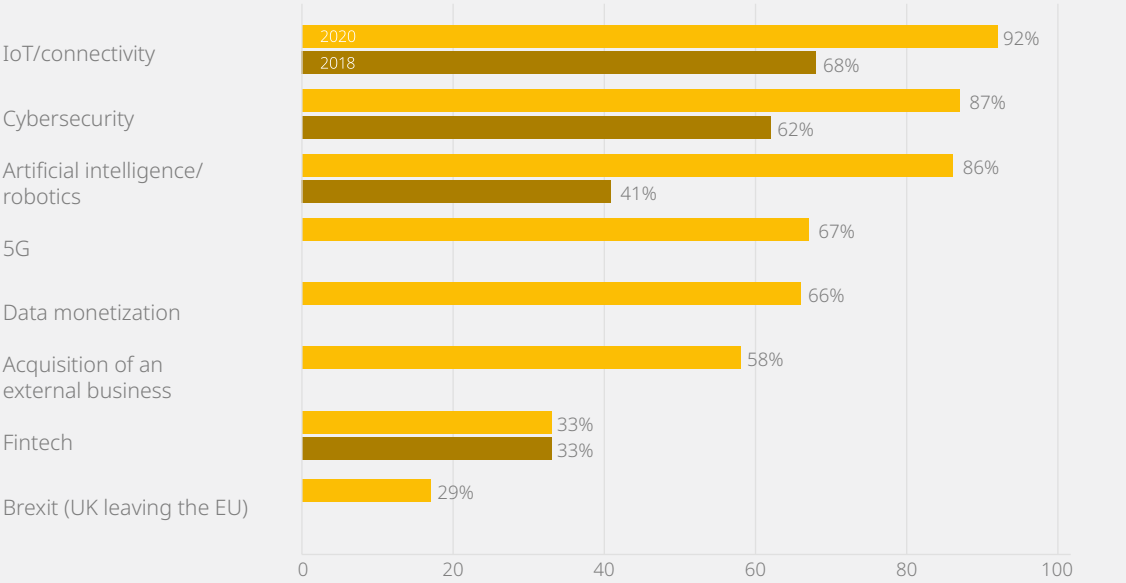
- The archiving of personal data and the digitization of processes, which has created huge amounts of data; and
- Regulators across the world concentrating their attention on personal data and its use, processing and privacy, and imposing fines for breaches.

In this context, ensuring systems are secure is fundamental to earning consumer trust, ensuring competitors or bad actors do not misuse or unfairly compete with your business, and demonstrating regulatory compliance. Unfortunately, despite the sophistication of cybersecurity systems (including the use of AI), it seems many breaches relating to cybersecurity are due to mistakes rather than concerted efforts by bad actors.

Surprisingly, AI/robotics (p. 25) is on par with cybersecurity in terms of importance to respondents, despite many scientists' view that AI is not yet that intelligent (except perhaps in data mining) and, arguably, the absence of any significant AI progress in the last 12 months. Certain applications of AI are booming, such as the increased personalization of experiences offered by major tech companies or social media platforms, and perhaps that's where respondents see increased opportunities.

Facial recognition is also showing its practical uses based on AI, such as in airports. However, no significant data is available yet to determine its accuracy in crowd-surveillance situations.

Fig 7
Potential opportunities



Question. Adopting the scale of 1-8 where 8 equals the highest potential and 1 equals the lowest potential, please rate the following opportunities in terms of offering the most potential for business growth. Single code per area. Base: Total respondents 2020 (350) 2018 (350).

More than half of respondents placed acquisition of an external business (p. 12) among their top three for most potential growth. The results are no surprise. Quite often, during the last few decades, new technologies have been bought by bigger players who have fallen behind with their own technology. The novelty of recent years is the unprecedented level of new businesses and technology, creating greater opportunities but also a greater risk of investments backfiring if a new technology doesn't gain traction.

The potential fallout of the COVID-19 pandemic may mean there are some attractive propositions suddenly available. We find that the more developed and proven a technology or business is, the more likely that it is bought outright compared with those at an early stage, where investors typically buy a minority stake to ensure access, should it succeed.

Acquisition of external businesses

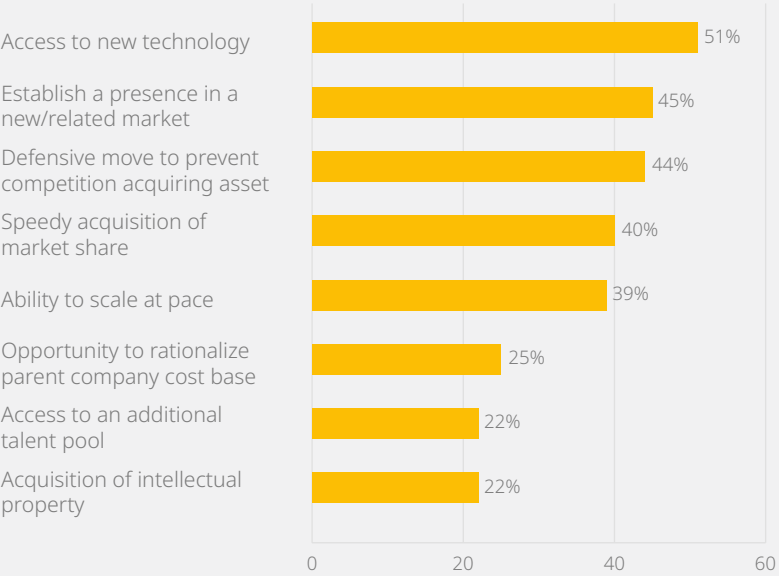
Companies looking to stay competitive, expand their global footprint, or enhance their service or product offerings are increasingly looking to gain technology and technological expertise through mergers and acquisitions. In contrast to other channels for external technology sourcing, such as alliances, licensing, or the purchase of intellectual property, M&A provides a high degree of control. This may improve shareholder/management discussions regarding the acquisition, complement their in-house R&D, and provide employee opportunities for knowledge growth.

When making an acquisition, companies are typically looking at a range of benefits (fig. 8):

- Access to new technology (51%, but far higher in the public sector and only 33% in financial institutions)
- Establishing a faster presence in a market (45%)
- A defensive move to prevent competition acquiring an asset (44%)
- Speedy acquisition of market share (40%)

Using acquisition to access talent was cited by only 22% of respondents – perhaps a consequence of COVID-19, with a view that recently scarce talent may now be a little more available as companies reduce headcount to cut operational costs.

Fig 8.
Most beneficial feature from acquisition of an external company



Question. Which of the following features do you believe are most beneficial from the acquisition of an external company for your own business? Select three.
Base: Respondents ranking acquisition of an external business 8, 7, 6 at Q1 2020 (203).

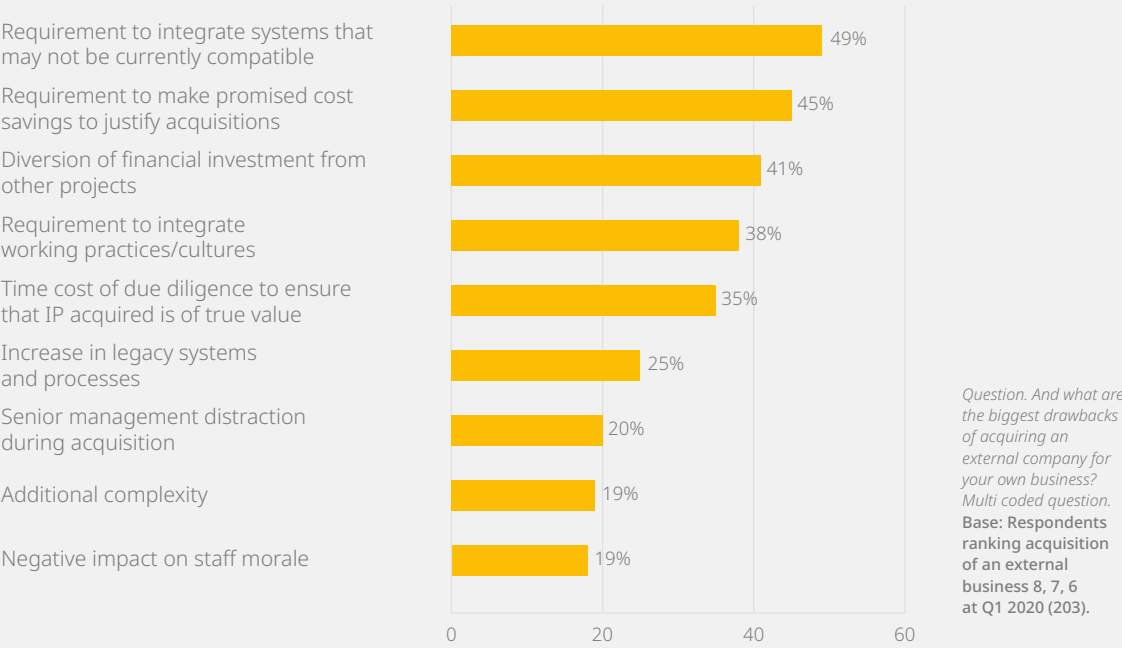
Companies often face a number of challenges when integrating external businesses. Our respondents have cited difficulty internalizing the technology as a major drawback, requiring compatible integration systems and a knowledgeable talent pool to further utilize the technology, which can lead to workplace frictions and additional financial investment. Another primary drawback is the need to justify an acquisition by economies of scale, even when the target can be purchased at no premium to market value.

The biggest drawbacks cited by senior directors rating acquisition of external businesses as a top issue included (fig. 9):

- Requirement to integrate systems that may not be currently compatible (49%, but 70% in the public sector)
- Requirement to make promised cost savings to justify acquisition (45%)
- Diversion of financial investment from other projects (41%, but 50% in the public sector)

Gaining technology and technological expertise through M&A can provide a high degree of control, but the integration of systems and workforces is viewed as a major challenge.

Fig 9.
Biggest drawbacks from acquisition of an external company



Technological distance often plays a role in the selection of M&A targets and the transaction price, for example if due diligence indicates compatibility issues or that large improvements and spending are necessary.

M&A is likely to be an increasingly important aspect of long-term strategy in technology. Companies need to perform due diligence and fully integrate acquisitions to maximize their investment value.

From a technological perspective, respondents ranked the key challenges of any acquisition as:

- Mitigation of skills gaps/ integration of workforces (53%)
- Securing budget to achieve integration objectives (43%)
- Systems integration (41%)

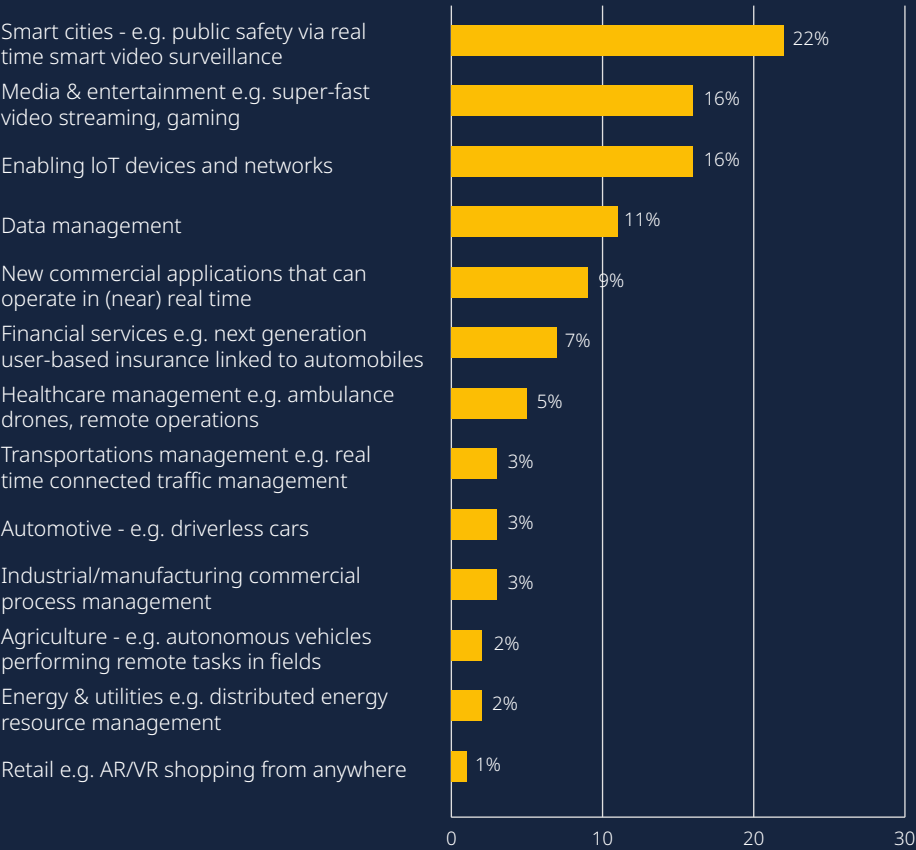
5G

Communications technology is set to change with the advent of 5G, enabling exceptional speed and new use-cases that drive productivity and consumer adoption. 5G is new to the European Technology Index this year, but we can still draw some interesting conclusions, especially when compared with the media hype.

Perhaps surprisingly, respondents thought 5G had the most potential for smart cities (fig. 10). This describes technology such as smart video surveillance to regulate traffic lights, sensors to help schedule efficient rubbish collection, and instrumentation to monitor the condition of infrastructure, such as roads and bridges.

Working with the IoT (p. 32), 5G allows many more sensors and devices to be used, with low latency (for immediate response) and low power (long battery life). Many of these technologies still seem quite futuristic, so it's interesting that business is taking this seriously. No single use-case looks to be the major game changer or focal point yet, though the top three predominantly relate to residential and civic applications.

Fig 10.
Cases where 5G offers most growth potential



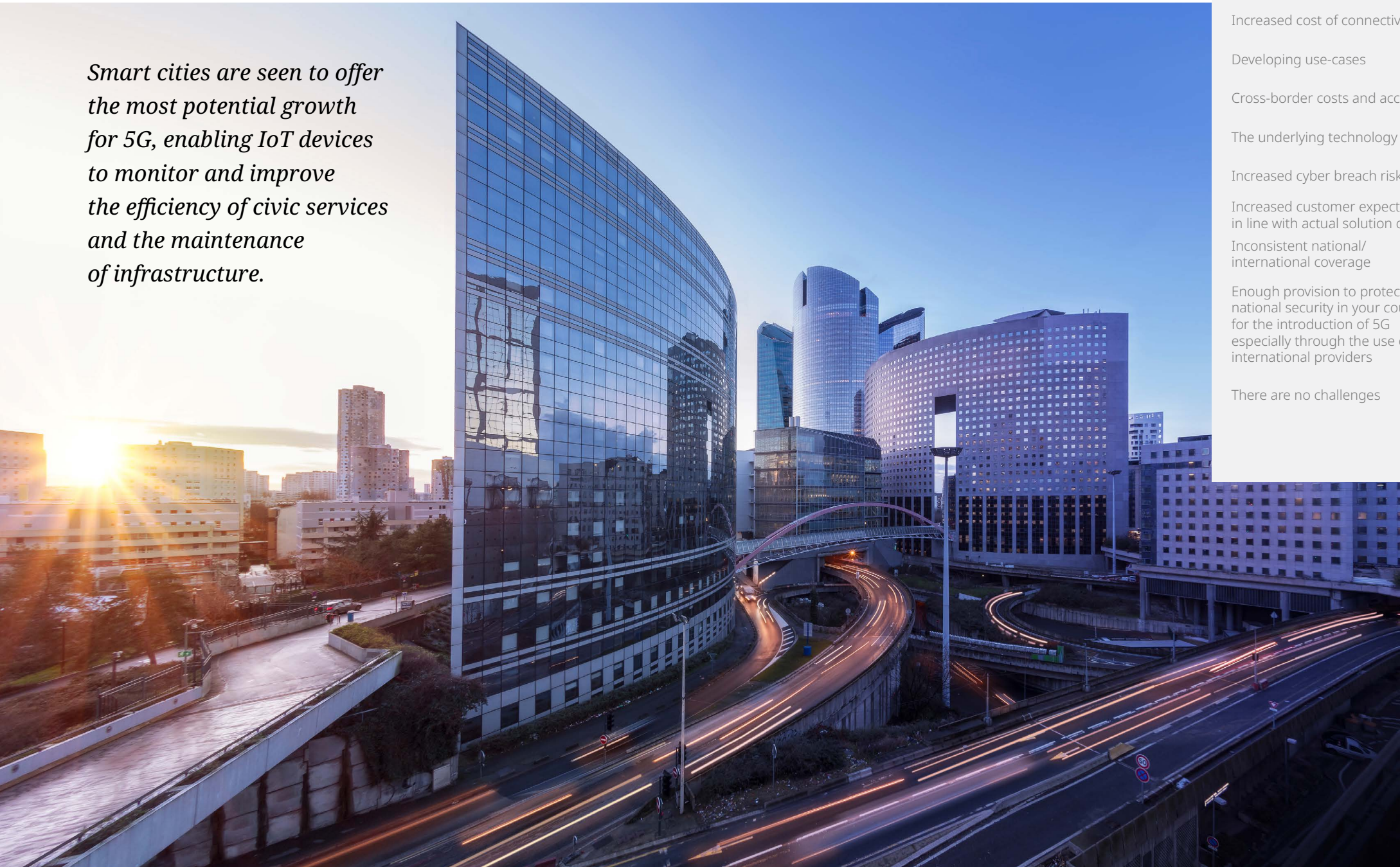
Question. In which of the following use-cases does 5G offer the most growth potential? Single coded question. Base: Respondents ranking 5G 8, 7, 6 at Q1 2020 (235).

Also conspicuous is the relative lack of interest in other use-cases. The industrial/manufacturing sector probably accounts for the most advanced 5G installations to date, such as the Port of [Hamburg 5G research project](#), demonstrating how its combination of reliability, safety, security and speed can deliver significant improvements in industrial efficiency in confined and secure areas.

Despite this apparent success, only 3% of respondents thought this area offered the most growth potential. Similarly, augmented or virtual reality, which have received a great deal of publicity and investment, scored the least growth potential, at 1%. It appears that respondents, across several industry verticals, may be relatively skeptical of the real benefits.

Questions around the main benefits of 5G show less distinct results. Faster processing and connectivity perhaps unsurprisingly rank highest, and network slicing and private LTE networks the lowest, possibly highlighting the need for wider industry education on 5G capabilities and benefits.

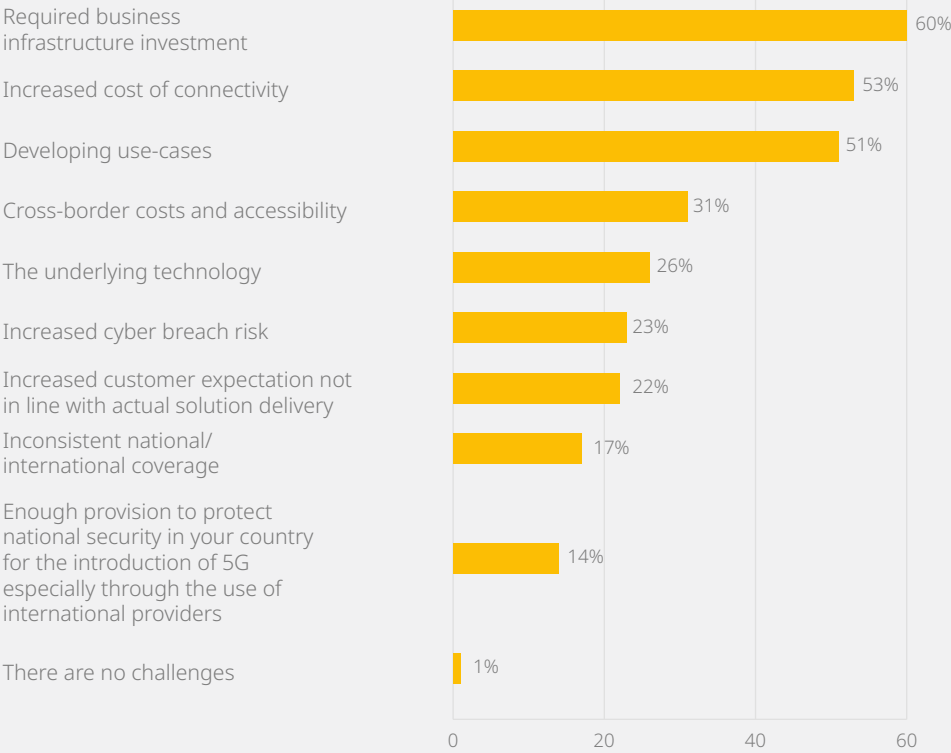
Smart cities are seen to offer the most potential growth for 5G, enabling IoT devices to monitor and improve the efficiency of civic services and the maintenance of infrastructure.



The top-ranked benefits of 5G are:

- Enables faster processing power (55%)
- Increased connectivity (51%)
- Development of new business models (46%)
- Lower latency (44%)

Fig 11. Challenges of 5G technology



Question. What do you feel are the challenges of 5G connectivity?
Multi coded question.
Base: respondents ranking 5G 8, 7, 6 at Q1 2020 (235).

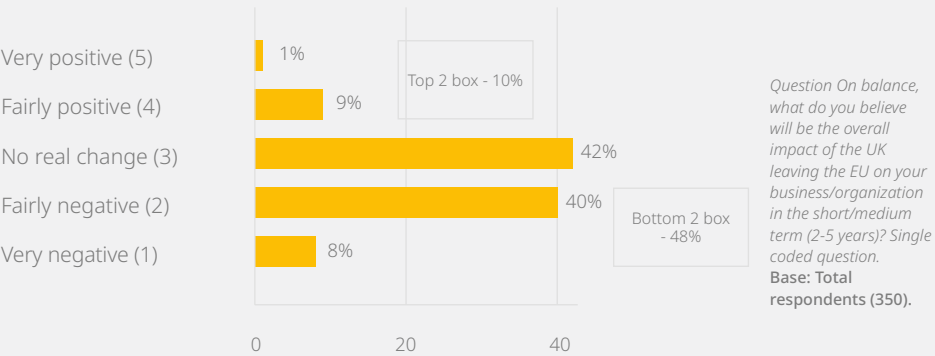
Our final question addressed challenges to the introduction of 5G. It is unsurprising that infrastructure investment ranked top, but it's notable that despite some years of reporting on 5G, "developing use-cases" is again one of the highest-ranked answers. This is further evidence, it seems, that the telecommunications sector needs to work harder to persuade others of the benefits of 5G (fig. 11).

Brexit

The bête noire of political discussions in recent years, Brexit has been forced off both the front and financial pages by the tragic human cost of COVID-19 and the associated economic shocks that are expected to follow. However, as the hiatus caused by the COVID-19 crisis passes, attention returns to UK-EU trade deal negotiations before the transition period ends on December 31.

Perhaps surprisingly, the European Technology Index results do not seem to reflect the strong political and societal divisions on this topic, though 90% of respondents are based outside the UK. A mere 9% expressed a strong opinion (very positive or very negative), with the plurality suggesting they expect no real change (42%). Opinions overall do slant slightly toward the negative, though (fig. 12).

Fig 12.
Overall impact in 2-5 years of leaving the EU



However, about one-fifth of respondents (fig. 13) see some likely benefits as overseas competition reduces, or the UK government is able to unwind a little EU-imposed red tape, more than one-third expect there to be no perceivable benefits.

Rather than a purely “disgruntled Remainer” political comment, this may reflect that technology and financial services sector businesses are part of such an interconnected ecosystem that very few anticipate facing either less competition, or being freed

from any EU compliance obligations. Both the fierce competition and compliance burden will remain for any business trading in the UK but also competing on a global stage.



The expectation that reduced UK-EU trade will be the main burden of Brexit may have been thoroughly superseded by COVID-19 concerns.

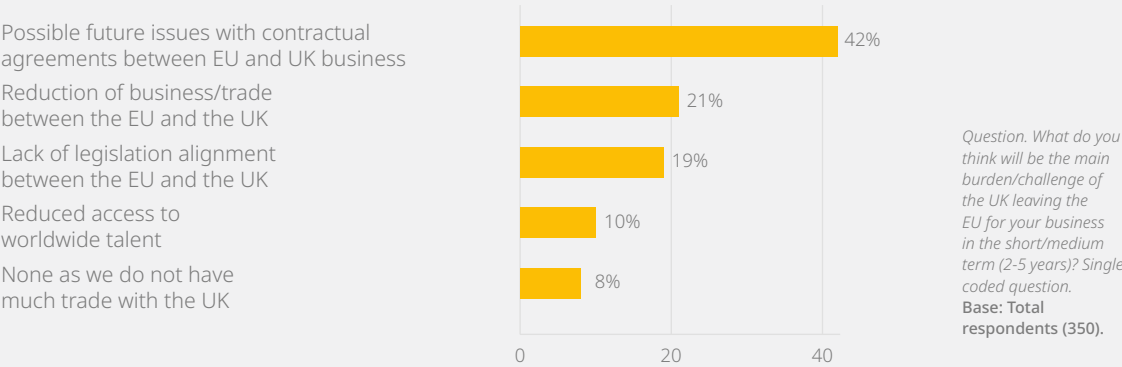
Fig 13.
Main benefit in next 2-5 years of leaving the EU



Supporting this global view, the majority of respondents perceive some negative connotations. Contractual complications (42%) and lack of alignment (19%) mean a combined 61% of respondents see legal issues, whether contractual or statutory, as burdens to overcome as a result of Brexit.

Our experience on tech sector deals since the Brexit vote in 2016 supports this view. The challenges of trying to Brexit-proof long-term contracts, and address the thorny commercial issues regarding how costs and compliance challenges arising from a change in law should be shared, have been an increasingly hard-fought area during negotiations. The expectation from 21% of respondents (fig. 14) that reduced UK-EU trade will be the main burden of Brexit may have been thoroughly superseded by COVID-19 concerns, with the impact of travel restrictions perhaps having a far more significant effect in the near to medium term.

Fig 14.
Main burden/challenge in next 2-5 years of leaving the EU

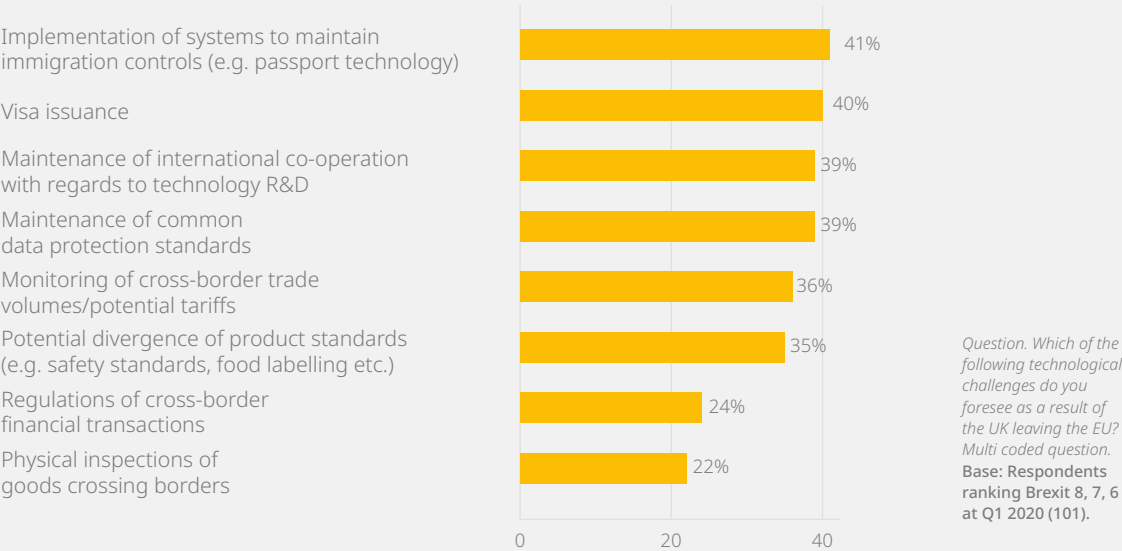


A lot of technology manufacturing takes place in South-East Asia, and many large technology services businesses have delivery locations in India, the Philippines or South Africa – all locations outside the EU. As such, the sector might have expected a lower Brexit impact than more EU-focused sectors, such as agriculture or automotive. As a result of COVID-19, however, supply chain alterations, and the realignment to more local supply and purchasing models, mean any economic dislocations previously expected as a result of Brexit might be harder to discern.

During political discussions, much was made of how technology might assist with border checks and to a greater or lesser extent address the issue of a hard border between Northern Ireland and the Republic of Ireland. Perhaps because of this political focus, respondents perceived immigration and passports as a particularly challenging area (fig. 15, 41%), although inspection of physical goods (another challenge discussed as part of the hard border debate) ranked much lower (22%). The need to maintain common data protection standards is also a significant concern, cited by 39%.

Ideally, the EU might eventually address the data flow challenge with an adequacy determination, allowing data to pass from the EU to the UK without additional measures required. But with no clear answer on that point at the time of writing, it's possible we'll see a flurry of standard contractual clauses put in place toward the end of 2020 to address this risk.

Fig 15.
Technological challenges as a result of leaving the EU



Data monetization

Despite the enormous volume and variety of big data held by businesses, it seems many have not yet made full use of it. Only 20% of respondents indicated they were making significant use of data monetization strategies, though the majority (65%) acknowledged some limited use. For a group of technology, financial services and public sector respondents, this is perhaps surprising at first view, but may speak to the deeper challenges associated with extracting real value from often unstructured data sets, and a shortfall in the necessary expertise – only 31% of companies reporting they already employ data scientists.

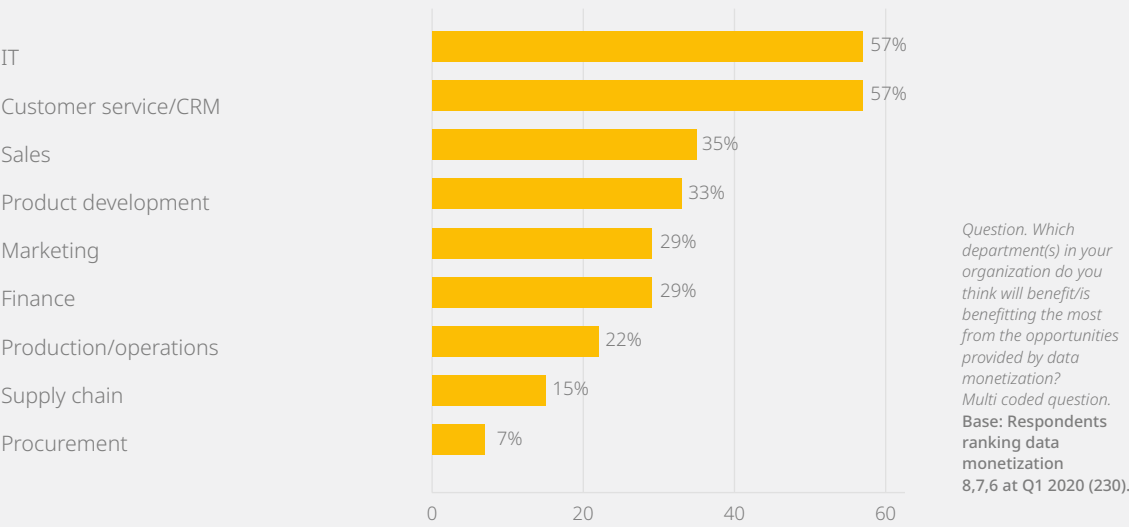
Consider the overlap between these results and those in the AI section (p. 25). Until recently, most data monetization strategies have relied on more traditional analytical techniques, and struggled to deal effectively with unstructured data. But easier access to significant computing resources via cloud platforms, and the commoditization of some AI/machine learning-powered analysis engines, creates more affordable opportunities to extract both value and return on investment.

Respondents cited IT and customer services (57% in both cases, fig. 16) as by far the most ripe to benefit from demonetization. This suggests respondents see data monetization (and the closely linked topic of data analytics) as particularly applicable to service-desk/ticket-driven processes, which tend to be at the heart of both business functions.

In these cases, monetization is likely to be focused on cost saving and efficiency, rather than generating new revenue from data. Business areas where monetization is more likely to come from incremental revenue (sales, product development) were next on the list, but cited by far fewer respondents (35% and 33% respectively). There are likely to be a variety of underlying reasons, but a key one is the fact that ticket-driven business areas tend to already hold large stores of well-structured and annotated data.

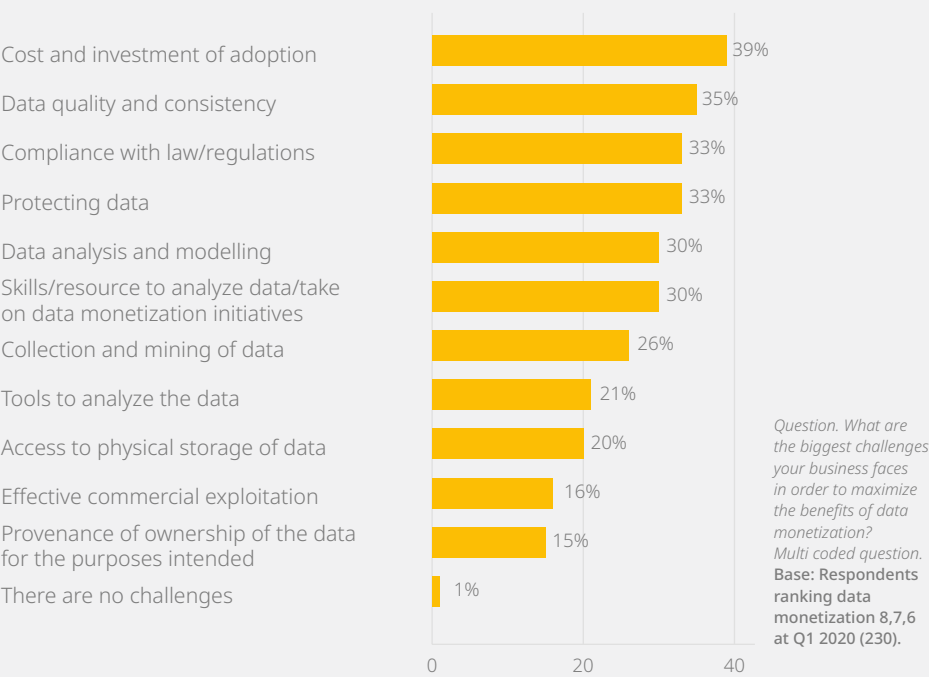
Expected revenue yields are relatively cautious, perhaps reflecting the challenges of extracting real value from often unstructured data sets, and a shortfall in expertise.

Fig 16.
Departments to benefit by data monetization



Investment cost to adopt data monetization (39%) was the challenge cited by most respondents, with issues of data quality (35%) and legal compliance (33%) completing the top three (fig. 17). Respondents were relatively conservative when assessing the likely revenue increase that data monetization might yield, with answers clustering into a bell curve peaking at around a 4% uplift. For this perceived return, the wait-and-see approach might look prudent, but if first-movers see a significantly higher revenue hike (or comparable cost reduction), those who waited may struggle to catch up.

Fig 17.
Challenges faced with benefits of data monetization



Cybersecurity

Cybercriminals have not been idle over the last year, quickly exploiting the vulnerabilities created by COVID-19 home working and increased digital and remote operations. Ransomware and extortion attacks continue to generate billions in revenues globally, with many criminals based in jurisdictions where enforcement is challenging.

While there is an upward trend in protection levels, there are notable reductions in perceived suitability of insurance and incident response plans.

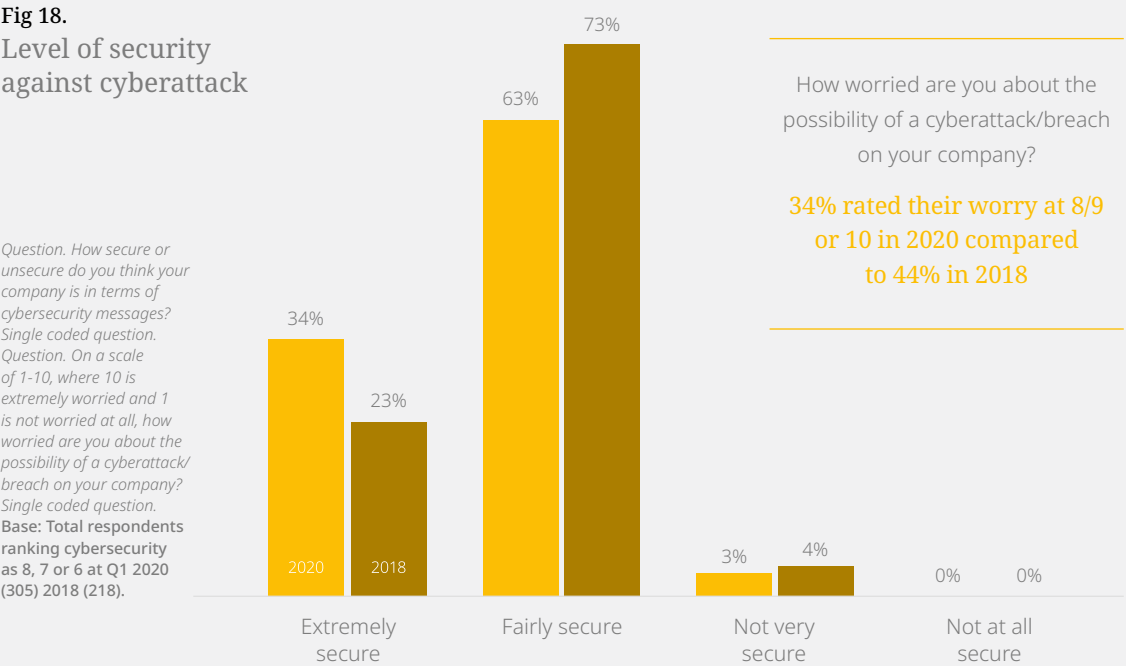
With the threat undiminished, cybersecurity was ranked second highest this year for potential business growth (87%), behind only IoT/connectivity (92%) (See fig. 7, p. 11). Recent news of the Ripple20 vulnerabilities, which reportedly have affected hundreds of millions of IoT devices, demonstrates that IoT and cybersecurity are inextricably linked.

34% of respondents thought their company was extremely secure against the possibility of a cyberattack, compared to 23% in 2018 (fig. 18). 63% felt their company was fairly secure, compared with 73% in 2018.

This upward trend in perceived protection no doubt reflects the significant budgets and resources deployed to tackle GDPR, CCPA and the many other privacy and cybersecurity laws introduced over the last two years, and the desire to avoid paying ransomware fees. Of course, there's no such thing as full security, and perceptions that a network is secure do not mean it is.

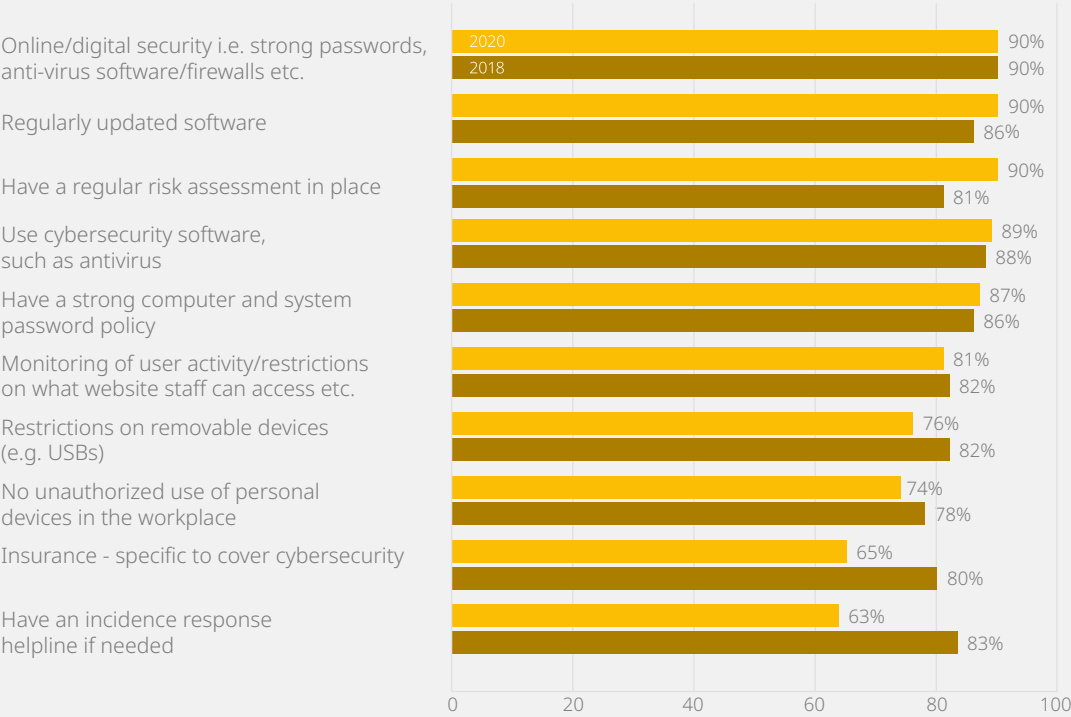
34% of companies (compared to 44% in 2018) still rated their worry about the possibility of a cyberattack as 8, 9 or 10 (10 being very worried). Further, 44% of financial institutions reported they were worried about cyberattacks, as did 35% of companies with over 10,000 employees. So while the general level of security is increasing, it appears there are many companies that don't have adequate protection. Even among those that do, some respondents still fear an attack, though this may simply reflect understandable concern about the potential impact.

Fig 18.
Level of security
against cyberattack



There have been notable reductions in perceived suitability of insurance and incident response plans this year. Only 65% and 63% of respondents respectively considered that insurance was adequate or there was an adequate incident response plan in place to cover cyber incidents, compared to 80% and 83% respectively in 2018 (fig. 19). It's unlikely that underlying insurance cover or breach response policies have changed a great deal in two years. Rather, the findings suggest companies have taken a closer, more critical look at cyber cover and response policies and, in many cases, found them wanting.

Fig 19.
Policies in place to meet cybersecurity issues



Question. Do you have any of the following policies currently in place to meet your basic cybersecurity issues? Multi-coded question. Base: Total respondents ranking cybersecurity as 8, 7 or 6 at Q1 2020 (305) 2018 (218).

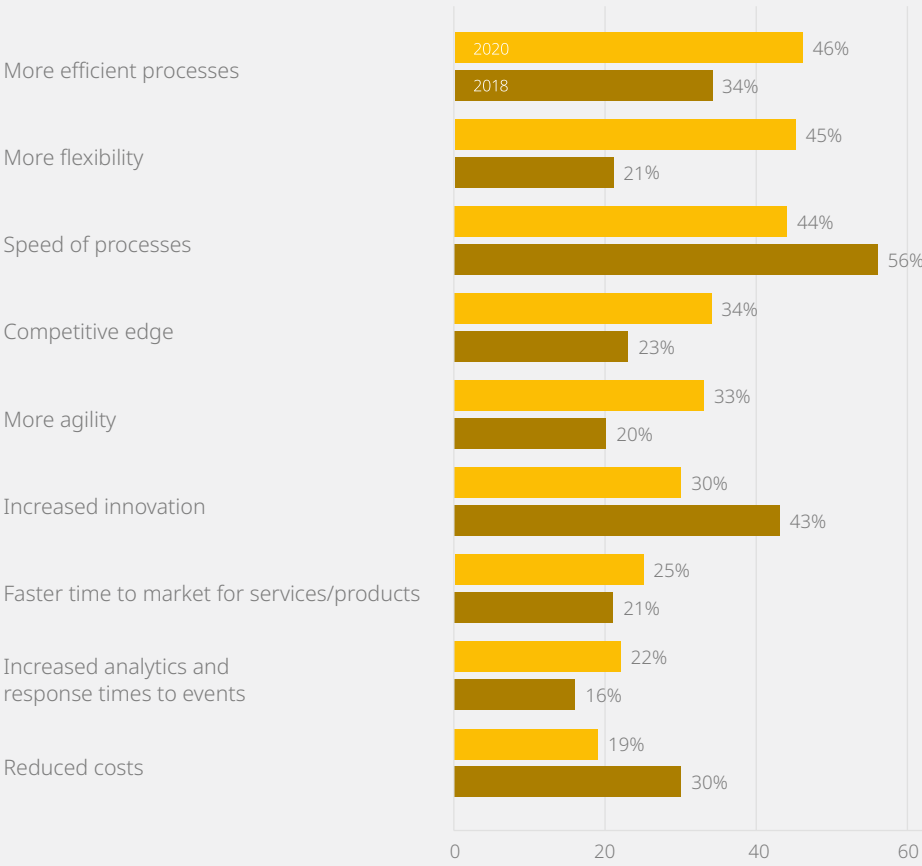
AI and robotics

The successful and legally sound adoption of new technologies requires careful consideration of the regulatory position (present and future), ethical issues, and the implications for employees and customers.

AI presents great opportunities across a variety of sectors, and in smart or connected cities, where the predictive, analytical and problem-solving nature of AI can make significant improvements to performance, productivity and customer experience. But there are also risks, especially in terms of retaining stakeholder trust, which have fueled a strongly polarized narrative around AI. According to Professor Stephen Hawking, “The rise of powerful AI will either be the best or the worst thing ever to happen to humanity.”¹

Retaining stakeholder trust requires a high standard of accountability, and businesses have a responsibility to engrain ethical behavior. To fulfil their oversight role, boards must have the right skillsets to understand how technology is being used and managed in their company, and adopt an overarching ethics framework that ensures certain principles on AI deployments are followed, such as personal privacy, transparency of use, and bias and discrimination mitigation.

Fig 20.
Benefits of AI/robotics



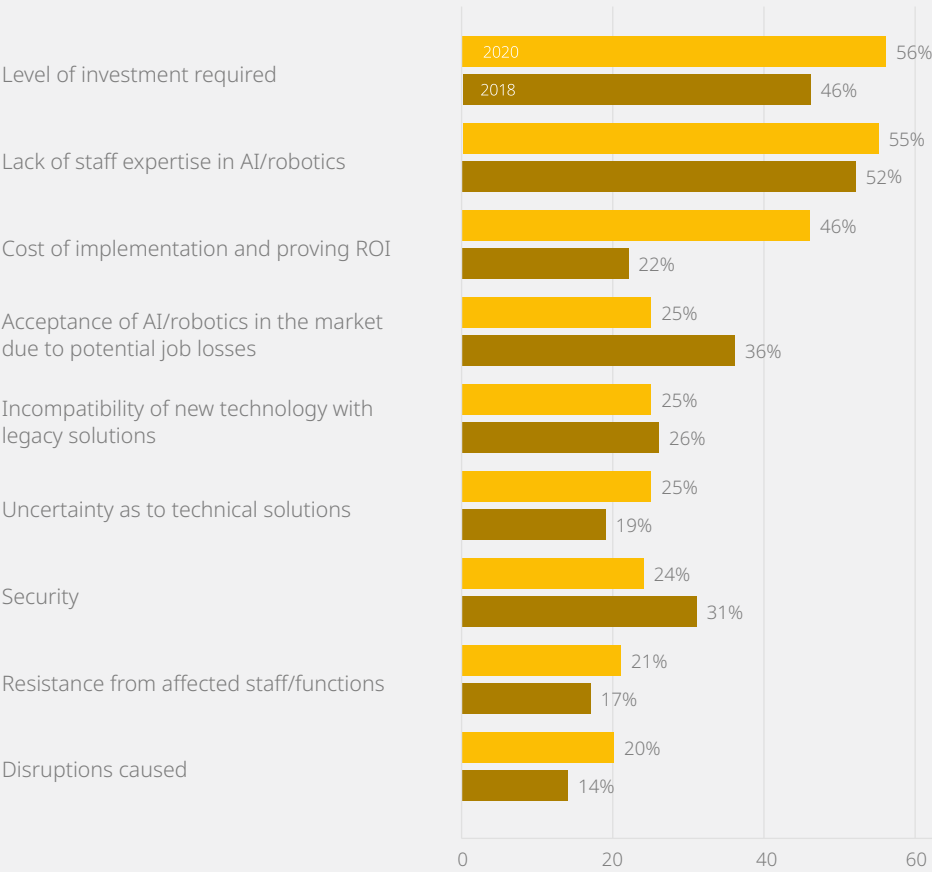
Question. What are the greatest benefits AI/robotics could offer your company? Multi-coded question. Base: Total respondents ranking AI/robotics as 8, 7 or 6 at Q1 2020 (302) 2018 (145).

¹ Professor Stephen Hawking, speaking at the launch of the Leverhulme Centre for the Future of Intelligence, October 19, 2016, <https://www.cam.ac.uk/research/news/the-best-or-worst-thing-to-happen-to-humanity-stephen-hawking-launches-centre-for-the-future-of>

A clear theme from our survey is that AI and robotics fall into the categories of efficiency drivers (fig. 20), affording greater flexibility and agility and thus leading to a greater competitive edge. Equally, respondents show that reduced costs have dropped in importance from 30% in 2018 to merely 19% in 2020.

As before, the research shows that AI solutions cannot merely be taken out of the box and plugged into an organization to provide instant benefits. 56% of respondents see the level of investment requirement as the main drawback (fig. 21), followed closely (again) by recognition that there is a skills gap (55%). The battle for key talent will likely continue as companies seek the expertise to fully adopt and exploit this technology.

Fig 21.
Drawbacks of AI/robotics

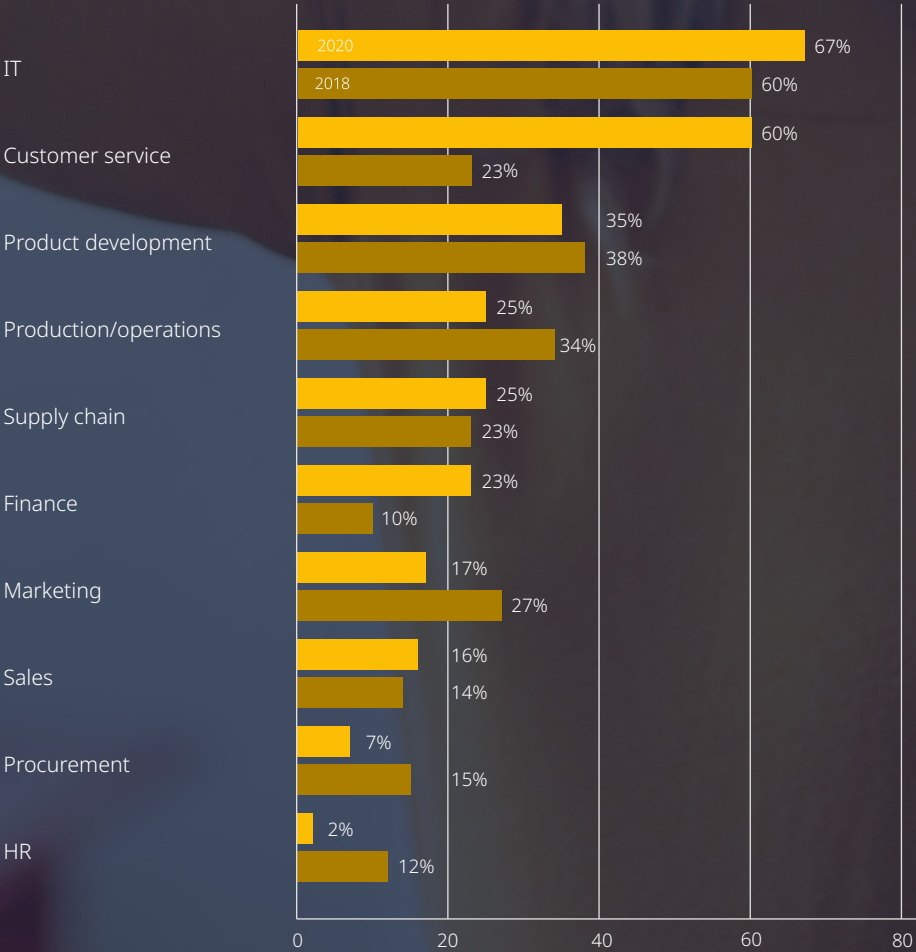


Question. What are the drawbacks of the implementation of AI/robotics in your company? Multi-coded question.
Base: Total respondents ranking AI/robotics as 8, 7 or 6 at Q1 2020 (302) 2018 (145).

In terms of main areas that would benefit from AI or robotics (fig. 22), the most striking result is customer service – more than doubling from 23% in 2018 to 60% in 2020. This highlights the increasing acceptance of non-human interfaces for common customer interactions. In contrast, there is a surprising stagnation in product development (down to 35% from 38% in 2018). While AI/robotics has huge potential for commercial applications, it may be that companies are yet to develop viable economic models or market strategies.

There is an increasing acceptance of non-human interfaces for common customer interactions. However, product development has stagnated, perhaps as companies continue to seek viable economic models or market strategies.

Fig 22.
Areas that would benefit from AI/robotics

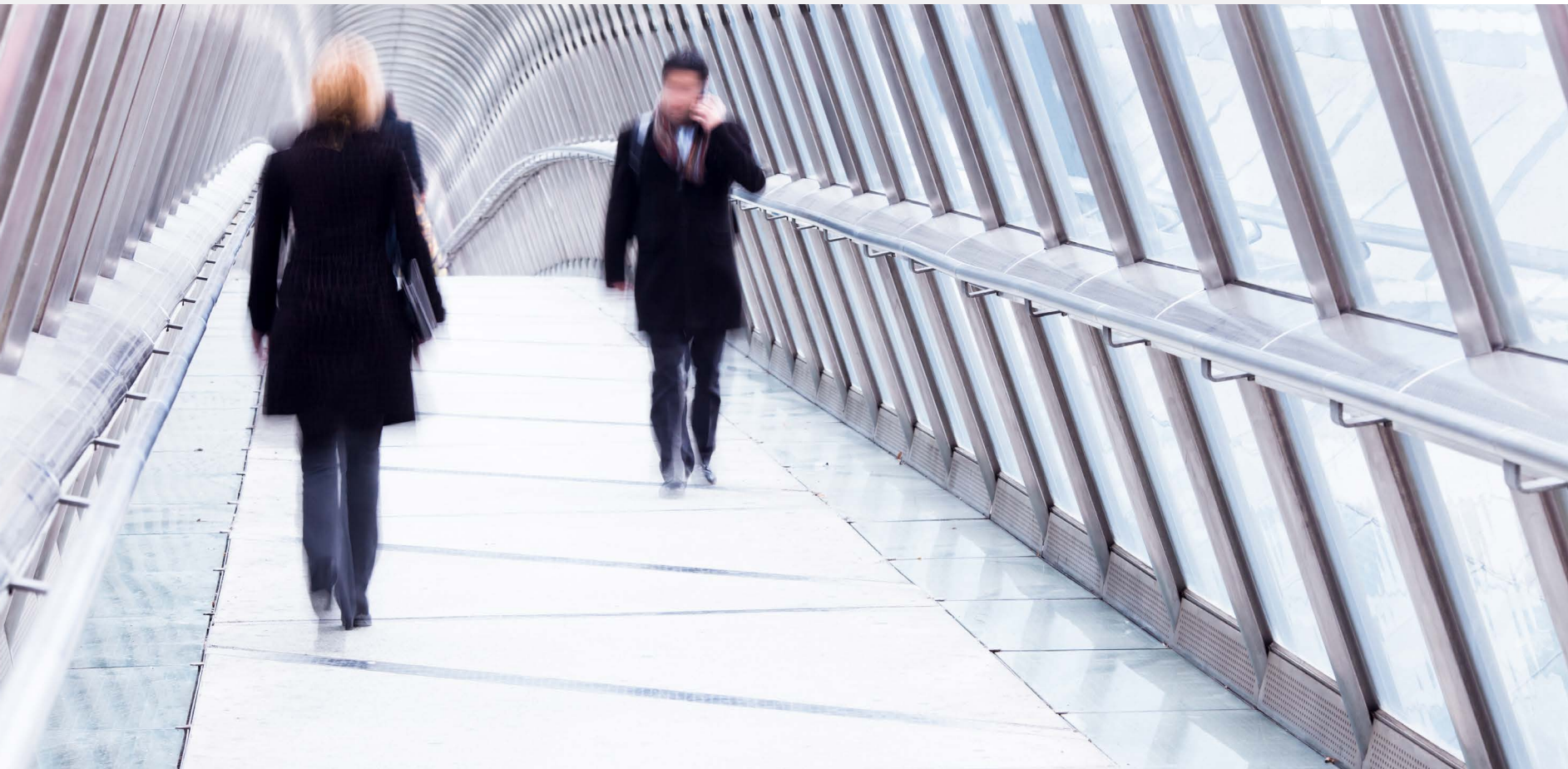


Question. Which areas of your company would or could benefit most from AI/robotics? Multi-coded question.
Base: Total respondents ranking AI/robotics as 8, 7 or 6 at Q1 2020 (302) 2018 (145).

The DLA Piper AI Scorebox

There’s a growing body of white papers, proposals for regulation, guidelines and best practice in AI technology, including the principles promulgated by the OECD, the European Commission draft regulation, the four pillars promoted by the IEEE, and the Beijing Principles.

We’ve distilled these emerging principles into common themes and created the DLA Piper AI Scorebox, which we’ll be launching soon. This free diagnostic tool will help you to assess your level of maturity by reference to best practices for the adoption of AI and new technology.

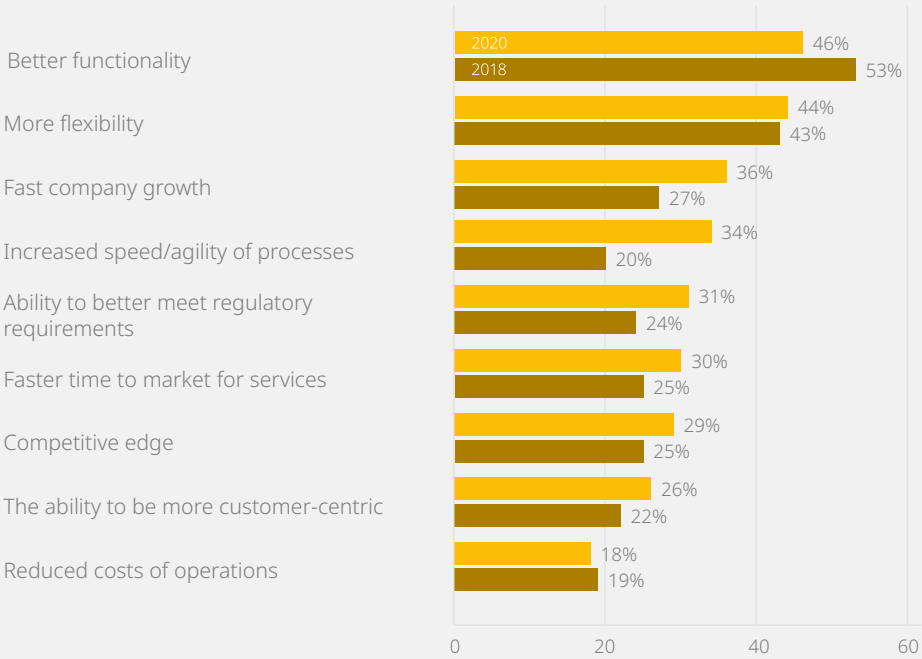


Fintech

Our survey reflects the continuing recognition that tech will be a key enabler of improved services through better functionality, increased flexibility and an ability to react faster and with greater agility to customer needs (fig. 23). The finding is consistent with growing demand from financial services customers for ease of access, more transparency and lower costs. Consumers are increasingly accustomed to accessing data and services online, and without geographic or working hours constraints. This applies at both a commercial and consumer level, and financial services businesses are realizing they’ll struggle to deliver the services customers want without improving the technology infrastructure driving processes and interactions.

Though in some cases Fintech will provide an avenue for faster growth and competitive edge, businesses not applying technology to improve services will struggle and may find it hard to survive.

Fig 23.
Benefits of Fintech

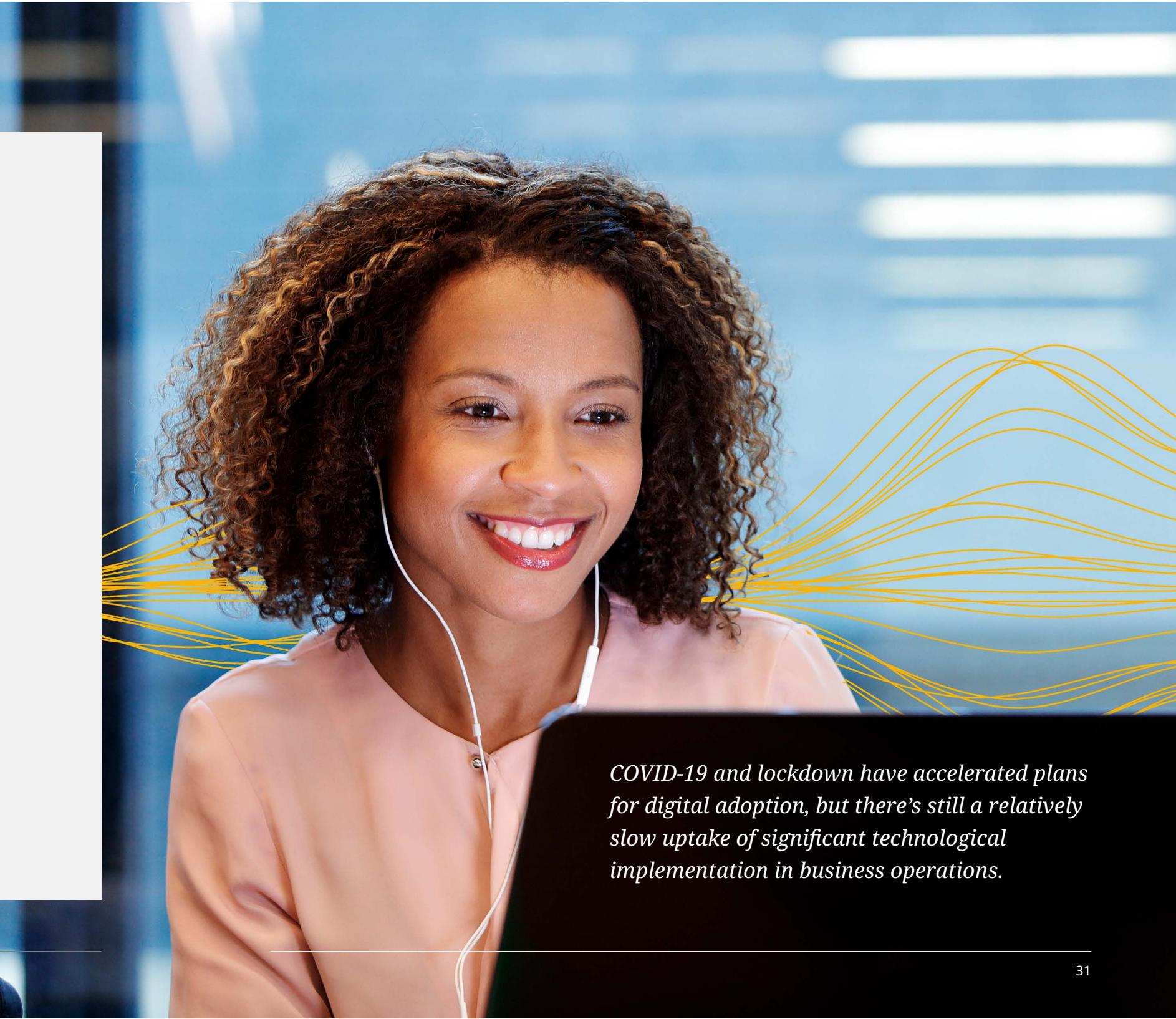


Question: What are the greatest benefits Fintech could offer your company? Multi-coded question.
Base: Total respondents ranking Fintech as 8, 7 or 6 at Q1 2020 (116) 2018 (116).

Despite this, we still see a relatively slow uptake of significant technological implementation in business operations. Key challenges highlighted in the survey include understanding and quantifying risk, availability and access to the right skills, and dealing with business integration and change management issues. Inevitably, in a regulated area of activity, top of this list is concern about regulatory implications, new technology adoption, significant technological upgrades and different approaches to business delivery.

Our 2018 survey found internal IT teams were the main driver of Fintech implementation. This year we included an option for internal senior management, which ranked as the second most important driver (after IT teams). Though this option was not available in 2018, it reflects our own experience of growing senior executive focus on identifying and understanding technological change, and driving implementation that will benefit the business.

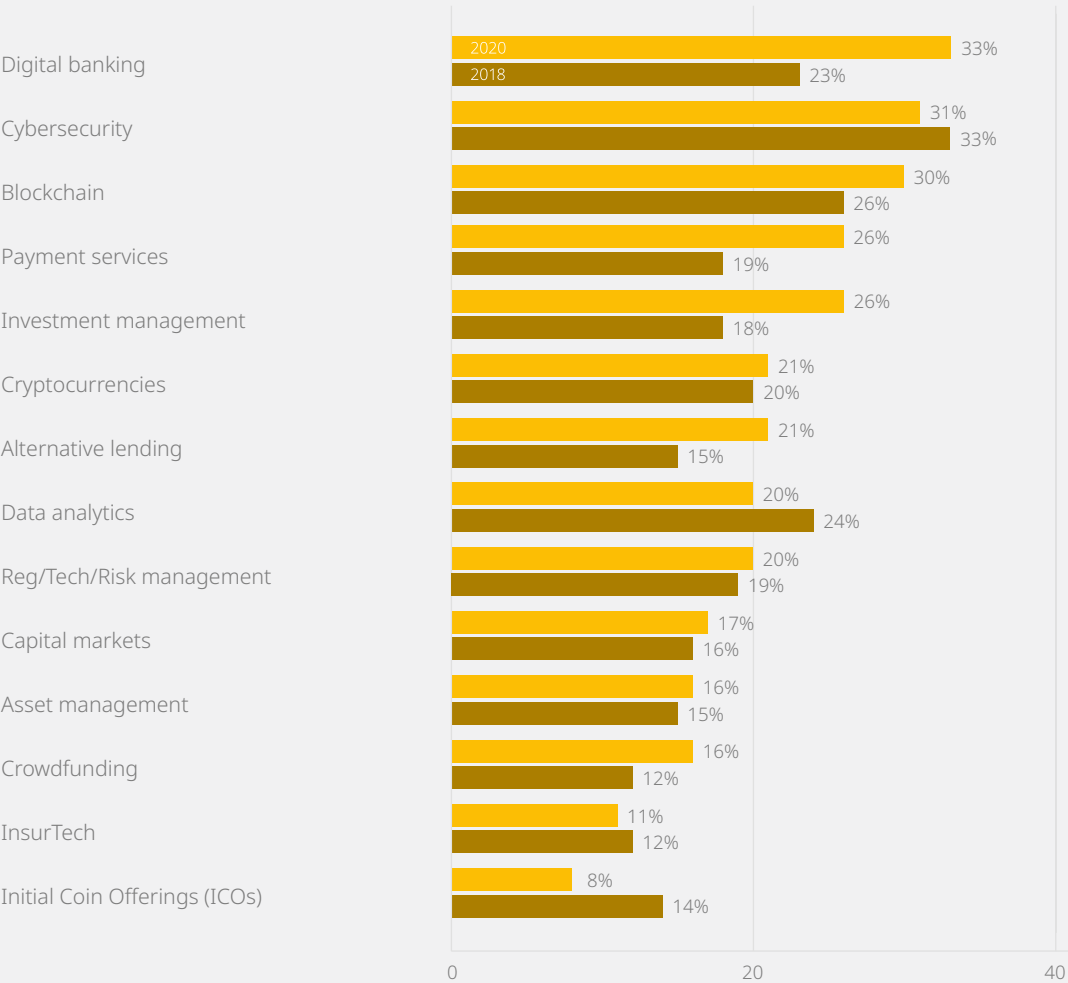
COVID-19 and the ensuing government lockdown measures have meant many businesses have accelerated plans for digital adoption. The payments space is also likely to be a beneficiary of this in the longer term, though activity inevitably declined during lockdown, which may be challenging to some payment services providers.



The areas perceived to have most potential across the Fintech ecosystem were digital banking, cybersecurity and blockchain (at 30% or above), followed by payment services and investment management (26% each) (fig. 24). This reflects the drive for more rapid service, transparency, flexibility and efficiency, while saving on costs. Businesses that don't adopt improved customer services will, ultimately, lose business.

The introduction of open banking and greater access for new entrants to payment infrastructure is driving incumbent businesses to review and improve payment operations. The move to a digital and more open banking environment demands greater attention to cybersecurity, especially regarding digital identity and money-laundering checks for virtual asset services. This will likely drive system improvements, but also require enhanced data protection and cybersecurity measures.

Fig 24.
Area with most potential across the Fintech ecosystem



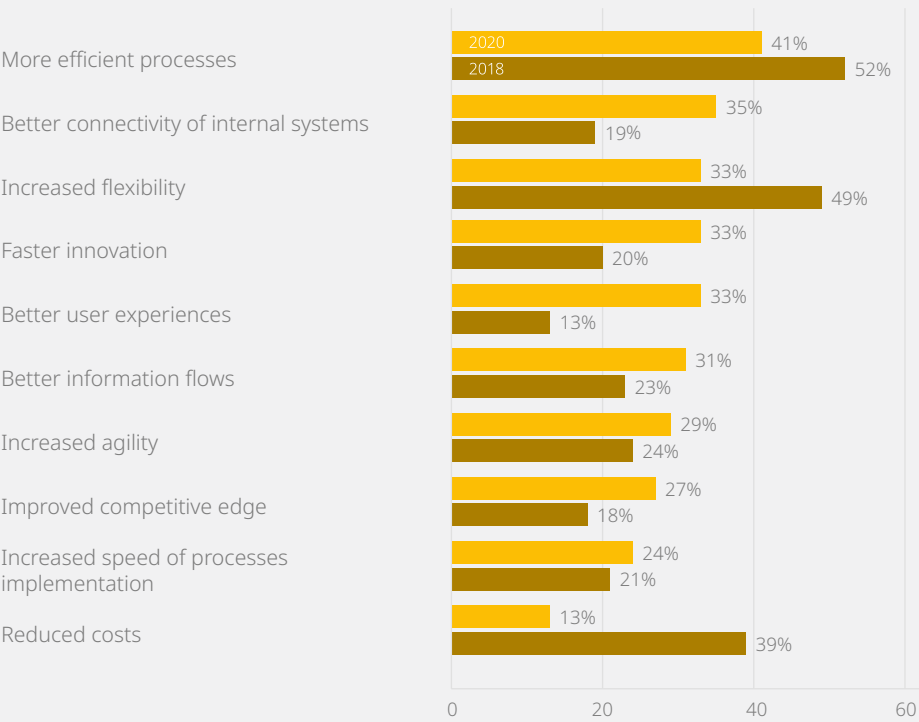
Question. In the next 1-3 years where, across the Fintech ecosystem, do you see the most potential for real value for customers being unleashed? Multi-coded question.
Base: Total respondents ranking Fintech as 8, 7 or 6 at Q1 2020 (116) 2018 (116).

COVID-19 and lockdown have accelerated plans for digital adoption, but there's still a relatively slow uptake of significant technological implementation in business operations.

Internet of Things and connectivity

2020 has seen further maturing of IoT/connectivity, as organizations strive to implement the technology to save costs and develop new offers and services.

Fig 25.
Benefits of IoT/connectivity

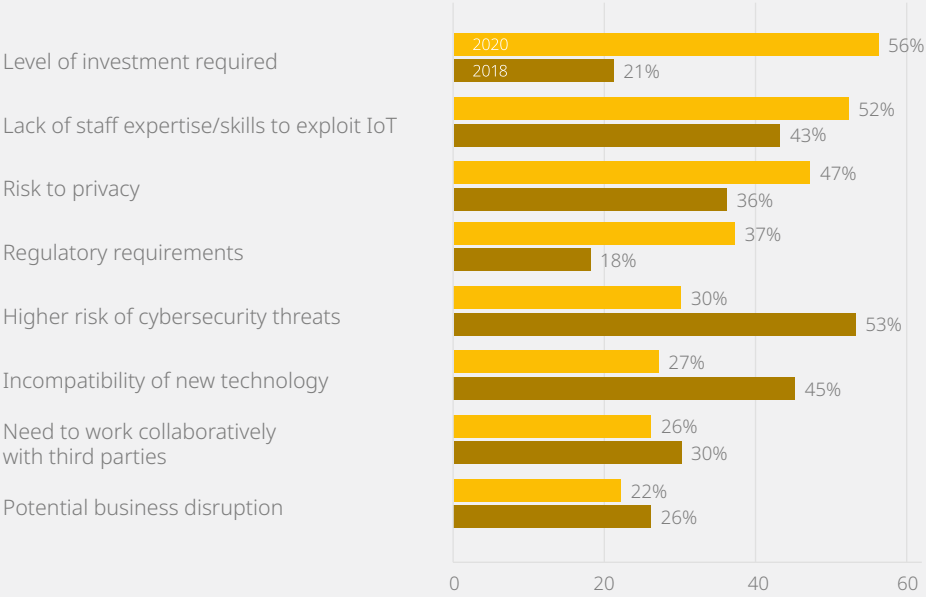


Question. What are the greatest benefits IoT/connectivity could offer your company? Multi-coded question.
Base: Total respondents ranking IoT/connectivity as 8, 7 or 6 at Q1 2020 (321) 2018 (239).

Despite the drawbacks of investment cost and lack of expertise, IoT ranked as the highest potential driver of growth, with significantly increased focus on the connectivity of internal systems, faster innovation, and better user experience.

Among the 321 senior directors (out of 350) who rated IoT/connectivity as a key driver for growth, there has been a shift in perception of the technology, with the focus now more on innovation than as a shortcut to cost reduction (fig. 25). Companies acknowledged and understood the risk of having their market position undermined by more efficient suppliers who – through IoT solutions – can leverage a more productive technical infrastructure, supply chain, and delivery system with better quality-control systems.

Fig 26.
Drawbacks of IoT/connectivity



Question. What are the drawbacks of the implementation of IoT/connectivity in your company? Multi-coded question.
Base: Total respondents ranking IoT/connectivity as 8, 7 or 6 at Q1 2020 (321) 2018 (239).

It's unsurprising that the main drawback of IoT implementation is the level of investment required, cited by 56% of respondents (fig. 26). The considerable cost reduction of sensors and analytics services in recent years might lead companies to hold back their investments. But the tax benefits that several governments are granting for IoT investments might change their perspective.

Privacy-related costs have been substantial recently, and potential fines are much higher due to GDPR. Big Brother concerns about IoT technologies have been widely expressed and inevitably ring alarm bells with data protection authorities.

Internal IT teams are still the primary driver for the implementation of IoT technologies, but that doesn't mean the decision to adopt is taken by them. Given the size of investments, top management will be involved, and we've seen a shift from wariness to understanding the value of IoT solutions and the timing of their adoption.

Inevitably, given the reported lack of staff expertise (52%, fig. 26), the adoption of IoT technologies requires a considerable reliance on third parties, at least until the necessary resources are created internally through a process of employee evangelization and knowledge transfer, or as a result of recruitment or acquisition activity.

Appendix

METHODOLOGY AND RESPONDENT PROFILE

DLA Piper commissioned Coleman Parkes Research to examine views on the current climate across core business and future growth areas in European companies. Despite unprecedented disruption from the COVID-19 pandemic, the European tech sector remains keenly focused on growth and organizational development.

RESPONDENT BASE AND METHODOLOGY

350 interviews were conducted online (supplemented by telephone research where required) in April and May 2020 with executives from key European technology firms (with more than EUR10 million annual turnover), members of the investment community with a technology focus, and government officials focused on technology policymaking. All interviews were carried out in the respondent's local language.

EUROPEAN TECHNOLOGY INDEX METHODOLOGY

The results of the survey have been collated and weighted to provide DLA Piper's European Technology Index Score. This is based on a diffusion index that weights the percentage of respondents' answers that are positive, negative and neutral, with the results presented as a scorecard next to each of the business areas monitored, and an overall index.

Conclusions

Global supply chains, international cooperation and human relations are undergoing a thorough shake-up and stress-test as the world navigates the COVID-19 pandemic and its consequent social and economic impacts.

As our European Technology Index survey landed, respondents were in swift transition from future focus to current crisis. Yet although confidence has understandably waned, amid tumbling revenues and workforce reductions, there is remarkable optimism about resilience and recovery in the tech sector, especially compared to the generally more depressed economic outlook.

Technology has already proven a great enabler, as an immediate tool for crisis response and cooperation, as a facilitator of new models for living and working, and as an engine for innovation and growth. But as consumer and commercial tech applications increase – especially in this era of remote working and digital transactions – so too do the cybersecurity risks and regulatory implications. At a time where the world feels more fragmented and fearful, businesses and nations must strike the right balance between openness and protection, weighing compelling appeals for cooperation in areas such as health, trade and the environment, against increasing apprehension about global alliances and adversaries, isolationist stances and threat actors.

Since its inception in 2013, the DLA Piper European Technology Index has tracked the rising trajectory of technology development and adoption. However, the impact of COVID-19 has brought the need for innovation and action into even sharper focus, and the 2020 report points to promising opportunities in areas such as IoT, AI/robotics, 5G and data monetization, despite the continuing challenge of investment cost and value extraction. In some cases, this is compounded by shortfalls in expertise, proven use-cases, and viable market models.

Consequently, while companies need to be fleet-footed, they must not circumvent due diligence on financial, regulatory, IP and contractual matters. In fact, these merit even greater consideration given the parlous state of global trade and politics, and the uncertain outcome of Brexit trade negotiations scheduled for year end.

The freedom and ease that technology brings is coupled with concerns about losing control, and it is imperative that robust regulation and practice are pursued, for example regarding surveillance, data protection and tech ethics. Further, in light of COVID-19, the climate crisis and the shifting sociopolitical and economic landscape, it is critical that companies examine the implications for business and financial processes; production and supply chain logistics; environmental, social and governance dimensions; product and service development; customer interactions and user interfaces; workplace culture and workforce modelling; M&A and investment/divestment strategies. Technology plays a role in all areas.

Deliberation continues regarding the shape and timing of recession and recovery, but it is a certainty that tech will be pivotal in forming and facilitating a new future.

We look forward to the next European Technology Index and discovering how business and technology have fared in a hopefully post-pandemic world.

To discuss this report's findings further, please contact:



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