

IT LEADERS 2020

A story of change, transformation and resources

A report by BCS, The Chartered Institute for IT

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Established in 1957, the British Computer Society (BCS) is the leading body for those working in IT. With a worldwide membership now of more than 65,000 members in over 100 countries, BCS is the qualifying body for Chartered IT Professionals (CITP).

BCS was incorporated by Royal Charter in 1984. Its objectives are to promote the study and practice of computing and to advance knowledge of, and education in, IT for the benefit of the public. BCS is also a registered charity.

CONTENTS

FOREWORD	4
1 IT LEADERS 2020: AT A GLANCE	5
2 IT LEADERS: IN DETAIL	6
2.1 Top priorities for 2020	6
2.2 Changing priorities	7
2.3 Cyber security in focus	8
2.4 Moving to the cloud	8
2.5 The Brexit effect.....	10
2.6 Conclusion: A story of transformation	12
3 UNDERSTANDING AI	13
4 SKILLS FOR THE NEW DECADE	14
4.1 Where do organisations have skills gaps?	16
4.2 Addressing the skills gap.....	17
5 WHAT KEEPS US AWAKE AT NIGHT?	18
6 TRUST: HOW DOES THE IT INDUSTRY THINK IT IS PERCEIVED?.....	19
6.1 The perception of AI	20
6.2 Where AI and personal data collide.....	20
Appendix 1: METHODOLOGY	22

FOREWORD

The IT industry is ever-changing and, as IT professionals, we need to be adaptive and agile too. But what drives this constant need for evolution? Where do these trade winds come from and where are they propelling the IT industry, professionals and professionalism?

Each year BCS surveys its members and IT leaders, asking them for their views about the near-term future.

This year we found that efficiency, innovation and change are dominating organisations' minds and these boardrooms. These are transformation's key drivers.

The changes in our world demand that products, services, processes - and people - also need to change.

In many ways, I think that is the *IT Leaders Report's* key strength: it focuses on technology, but it also explores professionalism and people. The IT industry isn't just about technology, it is also about professionals. For example, what skills are in demand? How will businesses fill their teams? These people questions are just as important as, for example, deciding which cloud provider to embrace.

The *2020 IT Leaders Report* also looks at the profession from the outside. How does the public view the product we make? How has public perception changed and evolved?

There are many answers in this report. I hope you find our research rewarding, useful and the basis of successful decisions in 2020.

- Paul Fletcher, CEO, BCS.

1 IT LEADERS 2020: AT A GLANCE

After surveying a body of IT leaders from across industries, BCS identified these as the trends that will likely dominate IT strategy and thinking in 2020:

- > The priorities for 2020 are 'operational efficiencies' (56%), 'continuous innovation' (53%) and 'business transformation and organisational change' (43%).
- > When asked to single out their number one priority, the top answer is 'business transformation and organisational change', selected by 21% of respondents.
- > The technologies that organisations are prioritising for 2020 are 'cyber security' (52%), 'cloud' (also 52%), 'IT governance' (36%), 'automation' (32%) and the 'as-a-service model' (31%).
- > When asked to identify their top priority, 'cyber security' (18%) edged ahead of 'cloud' (16%).
- > Only 12% of participants feel their organisation has enough resources to achieve success in 2020.

2 IT LEADERS: IN DETAIL

At the tail end of each year, BCS launches its *IT Leaders Survey*. We ask leaders about their priorities, resourcing needs, perceived challenges and technical focuses for the next year.

Each year, we collate the data and publish it in the spirit of helping us to all make stronger, better and more informed leadership decisions. This repository of data is called the *IT Leaders Report*.

BCS has been collating the *IT Leaders Report* (previously called the *Digital Leaders Report*) since 2014. The questions we ask and the data points we sample have, in the main, remained consistent - though there have been tweaks and changes over the years. Despite these slight shifts, the body of reports taken together provides a longitudinal view of how IT provision has changed over the past six years.

As you read on, we'll explore some of this year's key findings, set them against data from previous years and see if we can uncover any revealing patterns and trends.

2.1 Top priorities for 2020

This year, the *IT Leaders Report* found that the number one priority for 2020 will be 'business transformation and organisational change' (21%). This has remained consistent since 2018. The question is, why?

The answer can be found by looking a few steps down the list of top priorities, where you'll find 'continuous innovation' and 'maintaining competitive advantage' riding high among the top priorities. Again, these priorities are regular top scorers in our research.

**'OUTSIDE AN ORGANISATION'S WALLS
ARE LEGIONS OF CUSTOMERS, ALL
WITH EVOLVING NEEDS AND
CHANGING INTERACTION
PREFERENCES.'**

These three factors – 'transformation' (21%), 'innovation' (15%) and 'maintaining competitive advantage' (16%) – are all forces that act on a business and they are all driven, largely, by the same engine: customer expectation.

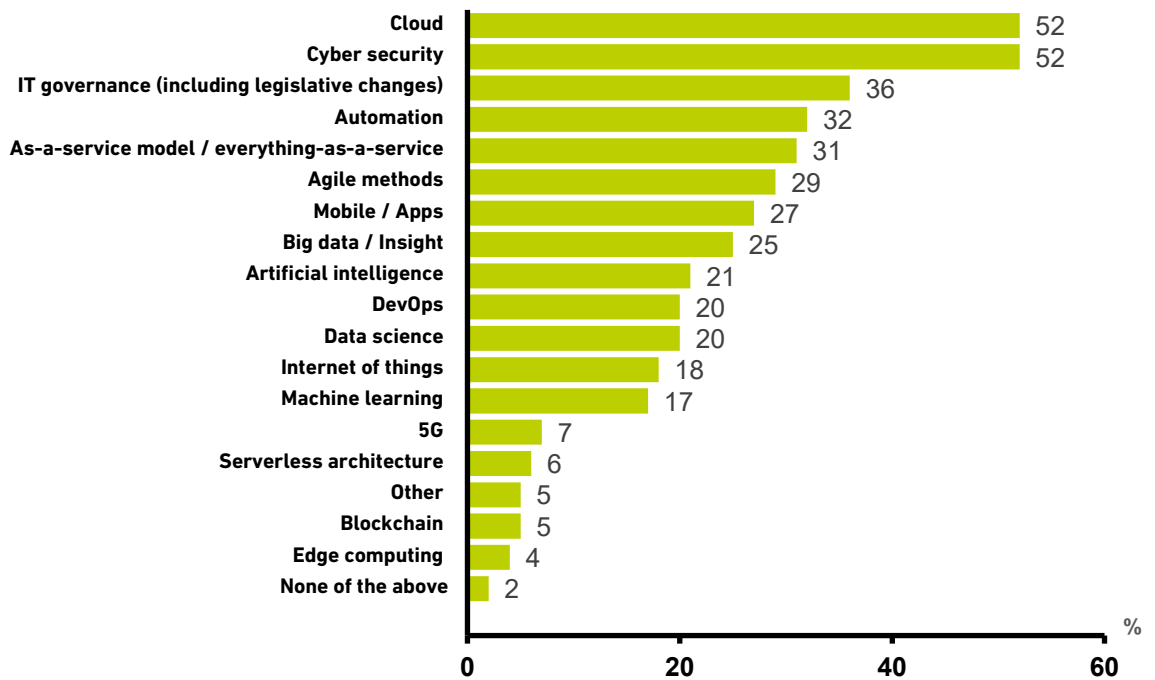
Outside an organisation's walls are legions of customers, all with evolving needs and changing interaction preferences. Brands need to be always on, always listening and always ready to respond.

These demand-side factors create the need inside organisations for enhanced and evolving technical, operational and cultural infrastructure. In order to meet their business objectives, organisations need flexible operating models. As we shall see, this need for flexibility is a recurring theme in our 2020 findings.

2.2 Changing priorities

The technologies that organisations are prioritising for 2020 are 'cyber security' (52%), 'cloud' (also 52%), 'IT governance' (36%), 'automation' (32%) and the 'as-a-service model' (31%). When asked to identify their top priority, 'cyber security' (18%) edged ahead of 'cloud' (16%).

TECHNOLOGICAL PRIORITIES FOR 2020



Respondents were able to select up to five priorities.

Source: BCS

Looking back across three previous years' results, we can see a distinct pattern: cyber security generally weighs in as organisations' number one priority and cloud comes in as the second most pressing topic. But, as always, there are other stories in the data.

2.3 Cyber security in focus

Glance back through 2019's news headlines and the reasons for cyber security's dominance as a number one priority becomes abundantly clear: in June 2019, Quest Diagnostics – a US lab testing company – saw data about 11.9 million customers fall into hackers' hands. The breach exposed financial, personal and medical records.

In July, criminals gained access to around 100 million Capital One customer records. Here, digital thieves made off with personal and financial details. Later in the year, Zynga, a game producer, experienced a hack that cost it the details of about 218 million customers.

'THE RANSOMWARE GANG RESPONSIBLE DEMANDED NEARLY FIVE MILLION DOLLARS TO FREE UP THE COMPANY'S SYSTEMS.'

On New Year's Eve, hackers attacked Travelex's infrastructure and network. The criminals launched a ransomware attack that brought the foreign exchange firm's computers to their knees. Across the globe – from Europe to Asia and the US – Travelex was reduced to using pens and paper to process currency transactions. The ransomware gang responsible demanded nearly five million dollars to free up the company's systems.

The attacks mentioned here are, of course, some of 2019's biggest. Behind the headlines, at a local level, small and medium-size organisations fend off fraud and cyber attacks on an almost daily basis.

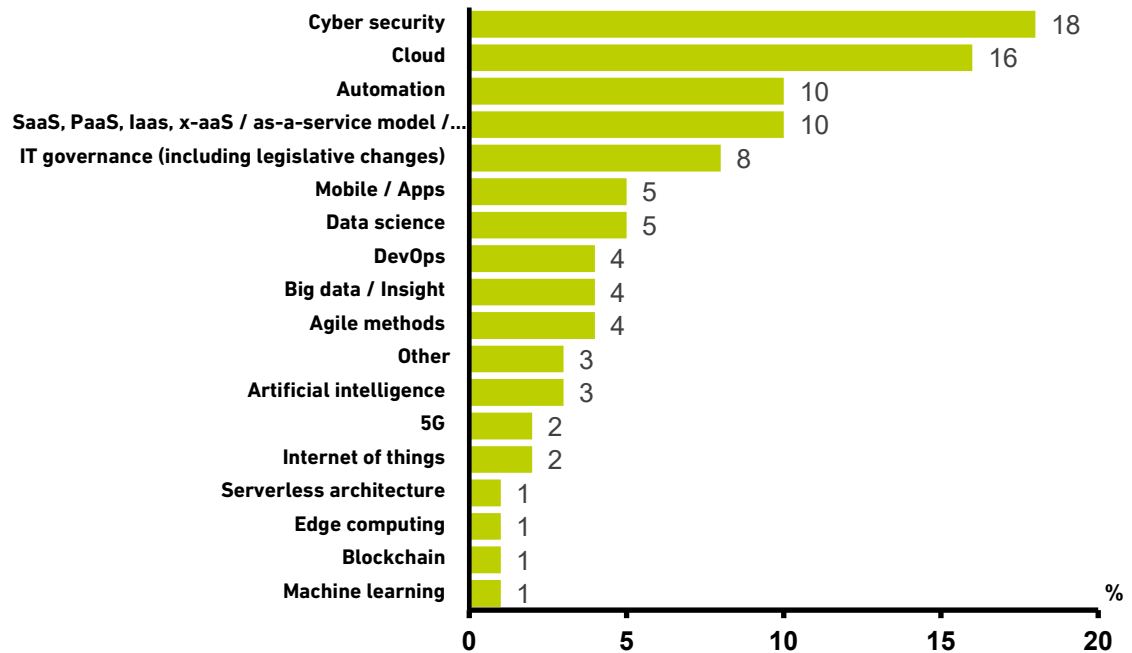
Beyond direct financial losses, cyber attacks also pose reputational and regulatory risks for organisations. Little wonder cyber security also ranks very highly among the factors that keep respondents awake at night – a topic we'll explore elsewhere.

2.4 Moving to the cloud

Though 'cyber security' dominates the agenda as organisations' number one priority for 2020 (18%), 'cloud' comes in a very close second (at 16%).

When it comes to start-ups, smaller organisations, or for new services (the deliverables often called for as part of a transformation project), cloud's pay-as-you-go model works particularly well. Why purchase physical hardware, space in a data centre and all the necessary support when you can simply rent what you need? And, what's more, be able to scale up quickly if the product or services gain traction.

NUMBER ONE TECHNOLOGICAL PRIORITY FOR 2020



Source: BCS

Cloud's attractiveness is further bolstered when you consider that enterprises which own and maintain their own infrastructure need to buy more compute and storage than is really necessary. Demand, particularly for online shops, is very spiky: the server load during a dull February day is likely to be many times lower than that on Black Friday. As such, organisations can carry up to five times more compute and storage power than they need so they can meet peak demand.

Commonly, this also means that enterprise might only use 10% of their bought, paid for and maintained physical infrastructure (<https://bit.ly/37qXjPm>).

Cloud also offers enhanced flexibility. On the technical side, adding compute and storage capacity is likely just a matter of making a request to a supplier. Cloud's ability to provide agility also resides in how it's paid for. Traditionally, enterprises have a longer planning and approval process for large capital expenditure programmes like buying IT infrastructure. By contrast, cloud with its pay-as-you-go model, is more likely to be part of an organisation's operating expenditure. So, agility, in the fixed infrastructure world, may be hampered by boardroom and financial due diligence.

Cloud is, then, the building block upon which many digital transformation projects are based. Evidence for this can be seen in 'organisational change' ranking as our respondents' number one organisational priority for 2020. As business strive to transform, they are – this report suggests – turning to cloud as an enabling technology. Transformation and cloud adoption march in lockstep.

‘TRADITIONALLY, ENTERPRISES HAVE A LONGER PLANNING AND APPROVAL PROCESS FOR LARGE CAPITAL EXPENDITURE PROGRAMMES LIKE BUYING IT INFRASTRUCTURE.’

The other part of the cloud story is the as-a-service model. Organisations don't just rent storage and processing power, they rent software (SaaS). We also have platform as a service (PaaS), infrastructure as a service (IaaS) and many more permutations. XaaS is a term that refers to renting anything as a service. It encompasses the vast number of products, tools and technologies that vendors now deliver to users as a service over a network – typically the internet. Again, underscoring organisations' desire to transform and keep pace, we can see that XaaS weighs in as organisations' number three priority for 2020 (10%).

Looking at the data in our report and by taking cloud and XaaS adoption together, it's reasonable to conclude that organisations are keen to leave behind ownership and all that entails. Again, it is reasonable to conclude that the drive for this is business transformation and organisational change.

2.5 The Brexit effect

As an impartial and apolitical organisation, BCS took a neutral stance on Brexit. We are, however, keen to discuss, debate and explore what this separation will mean for the technical and professional landscape.

‘LOOKING AT THE LAST THREE YEARS OF BCS DATA ABOUT PRIORITIES, REPORTED CONCERN SPECIFICALLY ABOUT BREXIT PEAKED IN OUR 2019 REPORT (5%) AND FELL BACK TO 3% IN 2020.’

Looking at the last three years of BCS data about priorities, reported concern specifically about Brexit peaked in our 2019 report (5%) and fell back to 3% (2020). This is despite the political and news landscapes being largely dominated by Brexit.

Our report data might then suggest that technical leaders are spending less time thinking about Brexit and focusing their time and efforts on concerns such as infrastructure, strategy, resourcing and the like.

Indeed, take this 3% statistic (2020 report) in isolation and you could be forgiven for concluding that the Brexit story has resolved itself – at least in the eyes of tech leaders. That might not, however, be the whole story.

NUMBER ONE ORGANISATIONAL PRIORITY IN 2020



Source: BCS

Glance again at the chart of organisations' number one priorities for 2020 and you'll see that 'operational efficiencies' has jumped in importance. In the 2018 and 2019 reports, 10% of tech leaders stated that operational efficiency was their number one priority. In the 2020 document, we see that this has increased to 17%; a significant jump.

What might be causing this drive for efficiency or, to put it another way: why might organisations need to do more with fewer resources?

The answer to this may well be uncertainty about Brexit. Business investment in the UK has, since Brexit began, trended downward. Indeed, companies' capital spending has shown its longest period of decline since the recession of 2003 (<https://on.ft.com/2NIA6k0>).

Capital spending, it should be noted, includes outlay by companies on things such as machinery, buildings, transport equipment and, last but not least, information technology. Our data suggests then, that organisations might be holding back on beginning projects and making investments that may pay dividends in the future. This slimming of capital expenditure may explain why technology

leaders are reporting an increasing need to drive efficiency: IT leaders might be focusing on technology, while financial leaders are adopting a 'wait and see' approach.

'BUSINESS INVESTMENT IN THE UK HAS, SINCE BREXIT BEGAN, TRENDED DOWNWARD.'

Further proof that organisations are tightening their purse strings can be found in the 2019 and 2020 reports. In the 2019 document, we saw that 'enhanced IT capability and skills' in existing workforce was the number one additional resource needed by organisations (62%).

In 2020, this story continued with 63% of respondents making the same observation. But behind the need for workers with better skills, we see 'increased budgets' jump from number three to number two in the list of additional resources needed for 2020.

Indeed, delve back as far as we can into the 2014 *Digital Leaders Report* and we can see that 'increased budgets' has always followed 'enhanced skills' and 'additional suitably qualified staff' in organisations' resourcing wish list. To put it another way: historically, increased budgets have generally ranked as tech leaders' third-biggest wish. Yet, in 2020, the desire for more financial resources became the number two need. This shift in the need for increased budgets in the 2020 report is significant when set against historical data.

2.6 Conclusion: A story of transformation

At the very top level, the 2020 *IT Leaders Report* can be said to show that organisations are working hard to transform and keep pace with change. To meet this need to keep adapting, organisations are turning to cloud-based solutions and services. All this is underscored by a need to ensure the organisation remains secure.

3 UNDERSTANDING AI

Artificial intelligence is something of an umbrella term. We have narrow AI, general AI, reactive machines, limited memory systems, theory of mind and Hollywood's favourite: self-aware AI agents. Add in augmented intelligence and it becomes clear that AI isn't a one-size-fits-all term.

It is, however, a term and a technology very much worth discussion. In the *2020 IT Leaders Report*, 21% of respondents said that 'AI' was an organisational priority for the year. Add in 'automation' (32%) and 'machine learning' (17%) and a cumulative picture emerges: organisations are looking to use some kind of 'intelligent' system to help them achieve their business objectives. Just over half the respondents (53%) selected at least one of these three options.

To achieve some clarity on what AI means to businesses and how organisations are using it, the 2020 survey asked respondents about what AI meant, within the context of their business. Replies were open text and revealing and included:

- > 'Planning ahead based on environment variables and historical statistics.'
- > 'Analysing huge amounts of security-related data to speed response times and improve accuracy of detection.'
- > 'General algorithms for intelligent matching for certain customer requirements.'

Taking a broad and general tally of opinions in the free text replies, most organisations – it appears – are using AI as a productivity tool where huge amounts of past data can be mined and conclusions used to influence future decisions: 'predictive analysis' as one respondent put it.

Again, broadly speaking, our survey reveals that a significant number of businesses are exploring the use of narrow AI to help them achieve their objectives through speeding up processes. We are, then, very much in the age of narrow AI – despite what media headlines and Hollywood sci-fi might have us believe (or fear).

'WE ARE, THEN, VERY MUCH IN THE AGE OF NARROW AI – DESPITE WHAT MEDIA HEADLINES AND HOLLYWOOD SCI-FI MIGHT HAVE US BELIEVE (OR FEAR).'

4 SKILLS FOR THE NEW DECADE

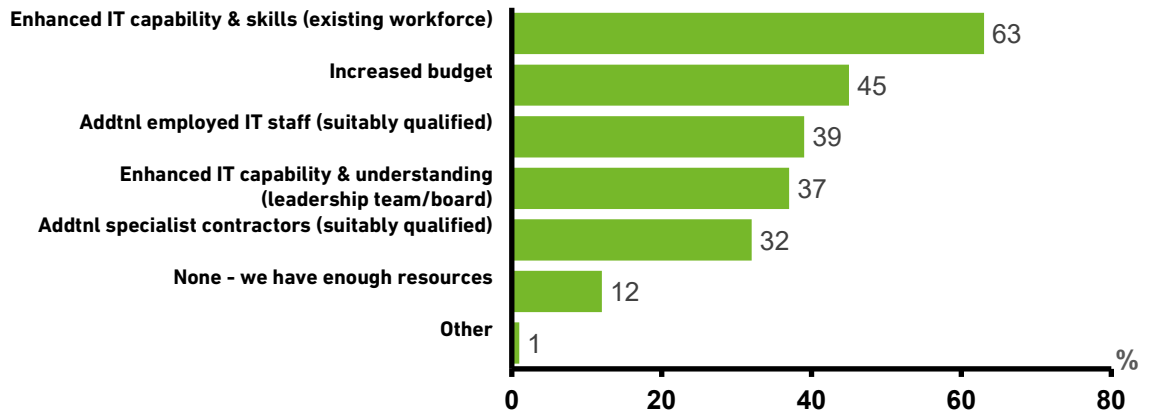
The IT landscape is ever-changing. As this report shows, technologies, standards and approaches ascend and descend in popularity. As such, different talents, capabilities and skills are always in demand.

When it comes to meeting these new tech trends, 'enhanced IT skills among the existing workforce' is rated as the top requirement in the 2020 report, with 63% rating this as their top resourcing need.

The need to upskill existing staff is a constant theme in previous *IT Leaders Reports*. Indeed, from 2014 onwards, we have seen leaders report that 'enhanced skills among their existing workforce' is their most pressing resourcing issue.

There are, of course, many ways in which organisations can enhance their workforce's IT skills. And this learning and development space is one where BCS is very active. We provide tools that enable organisations to understand and map the skills held within teams and departments, such as *SFI^{plus}*. BCS also offers professional certifications across specialisms such as Agile, DevOps, security, software testing and more.

**'THE IT LANDSCAPE IS EVER-
CHANGING. AS THIS REPORT SHOWS,
TECHNOLOGIES, STANDARDS AND
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IN POPULARITY.'**

 ADDITIONAL RESOURCES NEEDED


 Source: BCS

BCS' many member communities – both regional and discipline specific – all regularly hold events where members meet and share skills.

Along with upskilling existing staff, our body of *IT Leaders Reports* – taken together (2014-2020) – also shows that new and additional suitably qualified staff are always in demand. Dating back to the 2014 report, 'acquiring new staff with suitable qualifications' has generally lagged marginally behind 'enhancing skills among existing workforce'.

Take these two requirements together and we can quite safely conclude that the acquisition, maintenance and growth of a skilled and qualified IT workforce is a major resourcing challenge for organisations.

When it comes to capability gaps, the 2020 survey found that cloud, data and development skills were most in demand. Elsewhere in the 2020 report, we saw cloud rate very highly as a technology priority; so, it would seem reasonable that, where demand for technology leads, the demand for talent follows.

To gain a further understanding of skills gaps, the 2020 survey took a qualitative approach, asking respondents for opinions, ideas and observations. Noteworthy observations were:

- > 'A huge shortage of specialists with the right skill set(s) in AI and data analytics. This also extends into cyber.'
- > 'Skills that match the pace of changing technology in all areas, ranging from network and telecommunication to applications development platforms and latest systems monitoring tools and performance tuning. We also have a gap in implementing successful agile principles in managing projects and development of fit-for-purpose IT solutions for our customers.'

4.1 Where do organisations have skills gaps?

In our research, we asked organisations where they found the biggest skills gaps. The answers were provided in the form of free text and give a qualitative view on the types of capabilities organisations find it hardest to find.

A broad tally of responses revealed that skills relating to 'cloud' were most in demand. This seems very plausible given the cloud's high ranking in our list of technology priorities.

We also saw statements relating to data, data science, development, DevOps, cyber and security reoccurred frequently. Again, these align with our research into organisations' high-level priorities.

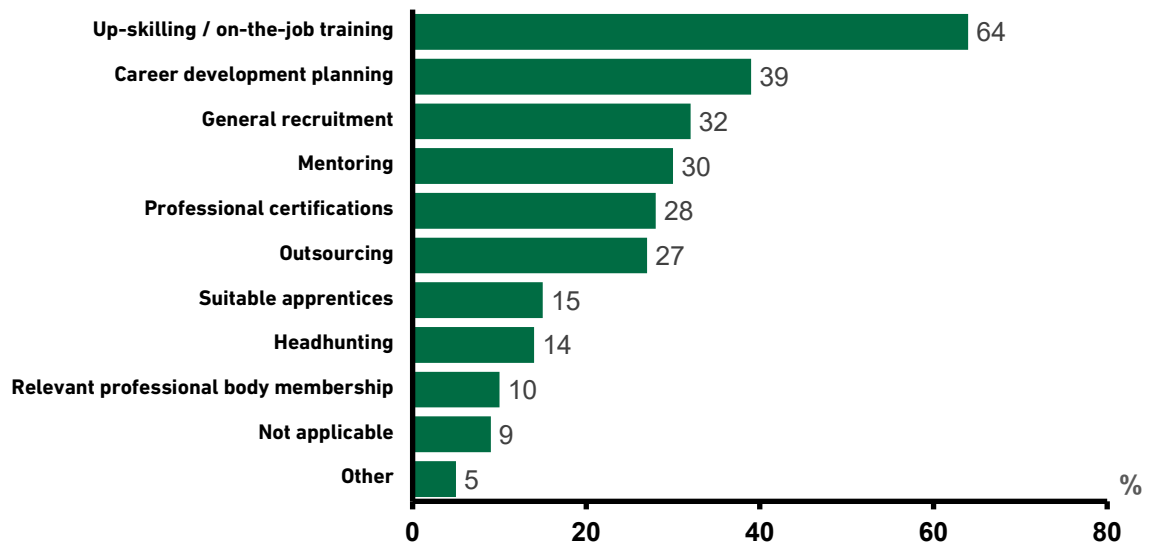
Noteworthy comments from respondents included:

- > Lack of broad knowledge of developing Microsoft technologies and cloud solutions.
- > Cloud native DevOps capabilities, such as serverless.
- > Understanding the business requirements and objectives and how IT can help deliver them.
- > There is a need to better understand the value business analysis skills can bring to the public sector in both policy and technical spheres, beyond the service design and user centred design currently adopted.

4.2 Addressing the skills gap

We asked BCS members and other IT leaders how they plan to address any skills gaps that may exist with their organisations. Up-skilling and on-the-job training (64%) was the resounding skills solution of choice.

PLANS TO ADDRESS THE SKILLS GAP



Source: BCS

5 WHAT KEEPS US AWAKE AT NIGHT?

Data about trends, corporate focus and operational needs is all well and good. It's useful insight when it comes to seeing trends and making decisions. However, it doesn't reveal much about what it feels like to be working on IT's front line. For this reason, each *IT Leaders Survey* asks: 'When considering upcoming changes and trends in the IT industry, what's most likely to keep you awake at night?' Unsurprisingly, when looking at the results, most open text replies coalesce around cyber security. Revealing replies include:

- > 'Security and privacy are becoming increasingly important for all SaaS companies dealing with customer data. Securing our ecosystem is going to be a competitive and necessary regulatory requirement that we need to embrace and deliver on.'
- > 'Cyber security is always a challenge and is the single biggest threat to the business from an IT perspective.'
- > 'Moving to the cloud. I can and want to keep things on premise. More than one provider is forcing me to the cloud and I have no confidence in the stability of services offered, from both downtime and security perspectives.'
- > And, simply, 'cloud security.'

The above quotes show that, along with cyber security itself being a direct source of concern, respondents are also very aware that moving to the cloud doesn't obviate cyber security risks. Rather, it can produce cyber security concerns all on its own. Factors such as regulatory compliance, insecure APIs, human error, DDoS attacks against providers, insider risk and end-point security are all concerns when managing a cloud estate.

'UNSURPRISINGLY, WHEN LOOKING AT THE RESULTS, MOST OPEN TEXT REPLIES COALESCE AROUND CYBER SECURITY.'

Other causes of sleepless nights linger around the idea of 'change' (more than the specific keyword 'change'). This is not surprising as, elsewhere, our data shows that organisations are prioritising change and transformation; this cascades down into the fast-paced adoption of cloud technologies and services.

This need to change and transform may be placing undue pressure on IT staff.

BCS has commissioned a survey and report that looks at mental health in the IT industry. A summary and analysis will be published by BCS.

6 TRUST: HOW DOES THE IT INDUSTRY THINK IT IS PERCEIVED?

The IT industry, its products and its people seem to seldom be out of the news. Whether it's grand scale data breaches, public worries about AI disrupting the jobs market, or the commercial abuse of personal data; the technology industry is – quite rightly – under intense scrutiny. The products and services we make are, after all, integrated deeply into the fabric of people's lives.

The weight of media coverage coupled with people's personal experiences with technology all contribute to their perception of our industry.

To understand how the IT industry is viewed, we asked BCS members and other people in positions of leadership how they felt the public's perception of the IT industry has shifted over the last five years.

Our research found the use and misuse of data is the single biggest fact that may damage the public's perception of our industry.

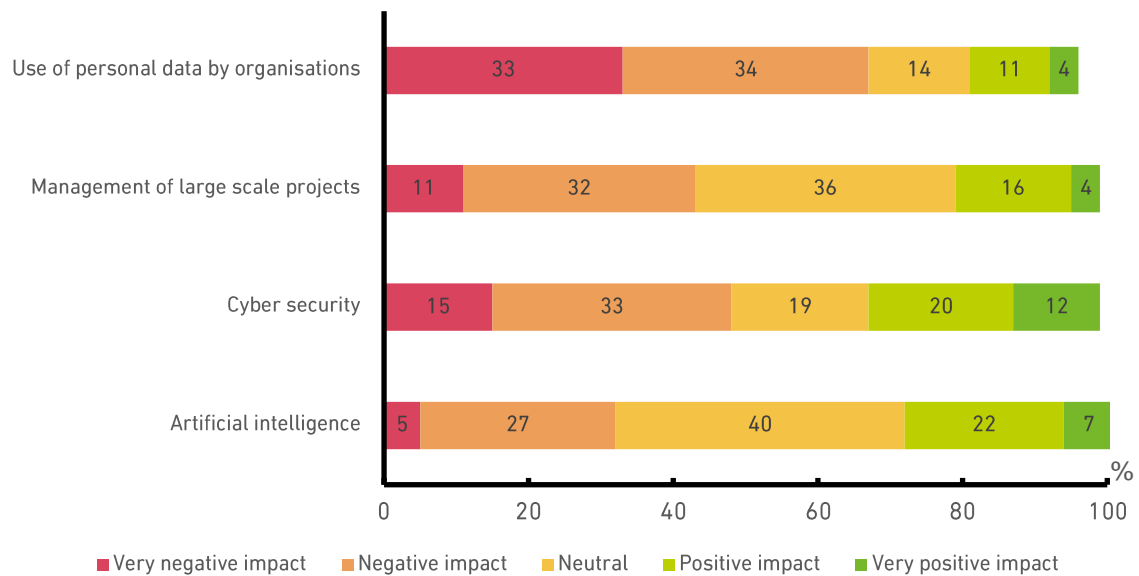
In total, 52% of respondents suggested that the use of personal data by organisations had the most damaging impact on the public's perception of IT. More tellingly, only 27% of survey participants felt that the industry's use of data contributes positively to technology's collective reputation.

'OUR RESEARCH FOUND THE USE AND MISUSE OF DATA IS THE SINGLE BIGGEST FACT THAT MAY DAMAGE THE PUBLIC'S PERCEPTION OF OUR INDUSTRY.'

The use of personal data is then, BCS found, more likely to damage perceptions of the industry and least likely to contribute positively to IT's profile.

It seems clear from these findings that organisations who gather, hold and process their customers' data need to work hard to ensure they act correctly and communicate clearly.

OVER THE PAST FIVE YEARS, HOW DO YOU FEEL THE FOLLOWING HAVE IMPACTED ON THE PUBLIC'S TRUST IN THE IT INDUSTRY?



Source: BCS

6.1 The perception of AI

Elsewhere in this report, we found that most organisations are currently deploying artificial intelligence in its most basic form – as a predictive tool or as an aid to productivity.

We found that 43% of respondents felt that AI can contribute positively to the perception of the technology industry. Conversely, only 20% felt that AI might damage the public’s perception of IT.

We can thus conclude that IT practitioners and leaders believe that the public feels broadly positive about AI and its use. Again, as we found previously, this challenges the tabloid representation of AI as disruptive and nefarious force.

6.2 Where AI and personal data collide

Artificial intelligence needs data: training data and information to learn from and data to work on. There is hence a very close link between AI and data – they are two sides of the same coin.

Our survey findings contain a warning to organisations: certainly, there’s a belief that the public feels AI is potentially a force for good; however, the industry feels that the public doesn’t trust it to handle and care for personal data.

The risk is, if the industry lives down to the public's worries and abuses personal data, tech firms may find themselves with less data to exploit using AI.

For AI to flourish and reach its potential, tech firms need to ensure they have bodies of secure, curated and permissible data to hand.

APPENDIX 1: METHODOLOGY

This report was written using findings generated on 08/01/20. In all 302 respondents completed our survey between 9 December 2019 to 7 January 2020.

The survey was conducted online and was promoted via a number of channels including direct email invitation, weekly newsletter and social media.

The BCS ELITE Group were also invited to take part in the survey. The survey was aimed at CIOs, IT managers and others who contribute to setting their organisation's strategic objectives. The majority of participants are BCS members.