

# Skills shortages in the UK economy

July 2018

We were overwhelmed by the positive response to our **first skills shortage bulletin** in April. From MPs and Peers to colleges and local authorities, we received messages of support for this work to raise the profile of skills shortages across the UK economy.

No wonder when the numbers are so stark. Latest government figures show that there are **at least half-a-million young people aged 16-24 who are unemployed**, and some estimates put the figure significantly higher. At the same time, businesses are clearer than ever about the **scale of skills shortages now** and the impact of the Fourth Industrial Revolution and Brexit in causing them to **grow further**.

In this edition, we feature the latest data from a wide range of sources, which together show the scale of the challenge. The Open University's 2018 Business Barometer estimates the **direct cost of skills shortages at £6.3 billion each year**.

New research from City and Guilds suggests that **nine out of ten UK employers struggle to recruit** and two thirds predict that skills shortages will stay the same or get worse in the next three to five years. This is reinforced by **growing proportions of manufacturing and services firms reporting recruitment difficulties** in the British Chambers of Commerce Quarterly Economic Survey.

The Skills and Employment Survey provides a longer-term lens with a dataset going back to 1986. It suggests that **jobs requiring higher education qualifications have plateaued** and time spent training on the job has fallen.

We also shine the spotlight on the tech industry with techUK, who highlight that there are an estimated **600,000 tech vacancies in the UK**, a figure predicted to reach 1 million by 2020. Fifty-two percent of digital businesses report that vacancies are hard to fill and this is costing the UK economy an **estimated £63 billion per year** in lost additional GDP.

We are very grateful to the colleagues who form our **Skills Shortage Analysis Group**, including key academics, organisations and business bodies with an interest in this area, who are keen to pool their knowledge and data to give everyone a clearer picture of where skills are needed.

Our third bulletin later this year will focus on the **creative and cultural sector** and in 2019 we will turn to **science, energy and utilities** and others.

**OLLY NEWTON, Director of Policy and Research, Edge Foundation**





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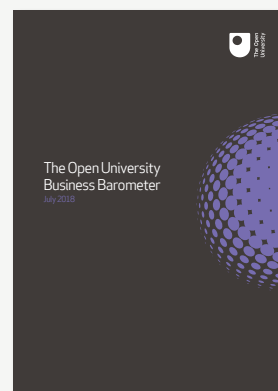
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# Open University Business Barometer 2018

(Published July 2018)



The Open University Business Barometer investigates the extent and nature of the skills shortage in the UK, and the effect it is having on organisations of all sizes.

The data presented within the report have been collated from 950 senior business leaders in organisations of all sizes across the UK between 8 and 25 May 2018.

You can find out more at: [www.open.ac.uk/business/apprenticeships/blog/business-barometer](http://www.open.ac.uk/business/apprenticeships/blog/business-barometer).

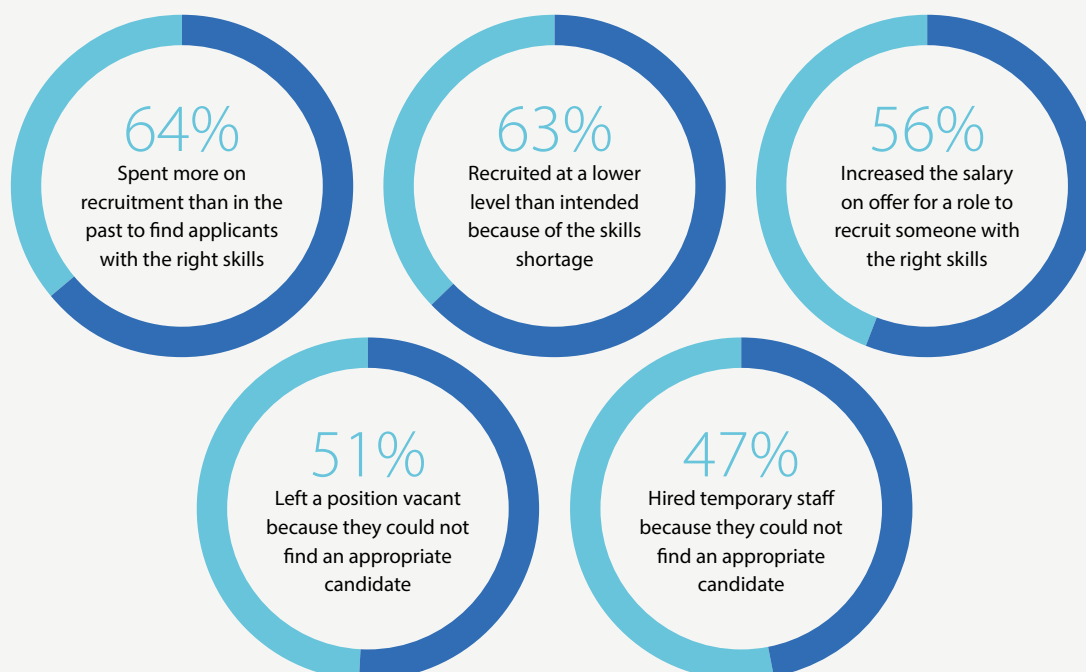
The Business Barometer reveals that the **majority of the surveyed organisations in the UK (91%) struggled to find workers with the right skills** over the past 12 months, and three in five senior business leaders surveyed (61%) report the skills shortage has worsened over the past year.

Employers are paying a high price to ensure their organisations have the skills required to remain productive, with the shortfall **now costing an extra**

**£6.33 billion a year** in recruitment fees, inflated salaries, temporary staff and training for workers hired at a lower level than intended.

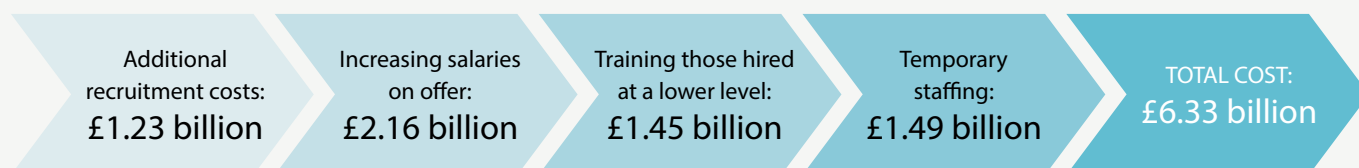
With skills in short supply, many senior business leaders (70%) find that **the recruitment process is taking longer** - by an average of one month and 22 days. As a result, nearly two in three (64%) report spending more on recruitment, with costs increasing by 49 per cent or £1.23 billion in total.

**Over the last 12 months the surveyed employers have:**





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While the recruitment process is taking longer, when identified, talented workers with in-demand skillsets are able to take advantage of their strong position, driving employers to **spend an additional £2.16 billion on salaries**. Two thirds (67%) were obliged to increase the salary on offer last year, typically on four occasions by an average of £3,400 each time.

Many organisations have been **forced to give up on finding appropriate talent**, choosing either to hire at a lower level than intended (63%) or to leave the role vacant (51%). To address the gaps left by doing this, employers spent £1.45 billion on training to bring workers up to the level required and a further £1.49 billion in temporary staffing.

The financial impact is not the only drawback of the skills shortage. Around **half of organisations (47%) say they are not as agile as they need to be due to a lack of skills**. In a changeable political, economic and technological climate adaptability and flexibility are essential. Management and leadership skills are particularly important for navigating change smoothly, yet nearly three quarters of employers (73%) have experienced difficulty in hiring for these roles in the past 12 months, which is cause for concern.

More concerning still is that more than **half of senior business leaders surveyed (53%) expect the situation to deteriorate over the next 12 months**. More than two in five (44%) expect their organisation to struggle financially in the next year, indicating that the issue needs to be urgently addressed.

Heightening the **focus on work-based training could help to increase the skills available in the workforce**.

Despite some teething issues, more than three in five business leaders (61%) agree that the apprenticeship levy – introduced by the UK government to encourage greater investment in work-based training – should help to reduce the skills shortage in the next five years.



**David Willett**, Corporate Director at The Open University

*Employers are spending more than £6 billion a year on the skills shortage, predominantly through recruitment activities. Buying skills and not building them is a short-term approach, which ultimately won't pay dividends. It is crucial that organisations take a more sustainable approach, using training to address their skills gaps from within and reducing their spend in the long-term.*

*Investing in work-based training, which allows workers to earn while they learn, will help organisations to bridge the divide between the skills available in the labour market and the skills they need, allowing them to focus on stability and growth in the future. Simply put, better training and development will result in more agile, loyal, motivated and productive workforces that are fully equipped to rise to new challenges and drive organisations forward.*

# City and Guilds – People Power

Does the UK economy have the skilled people it needs for the future?

(Published June 2018)



City & Guilds Group carried out the People Power research to investigate the state of the UK labour market, looking at skills shortages and current trends in employer-funded skill development. A survey of over 1,000 businesses complemented economic modelling by Emsi to provide a prediction of the occupations and industries most likely to grow and shrink by 2024. You can find out more at <https://bit.ly/2z8TCBo>.

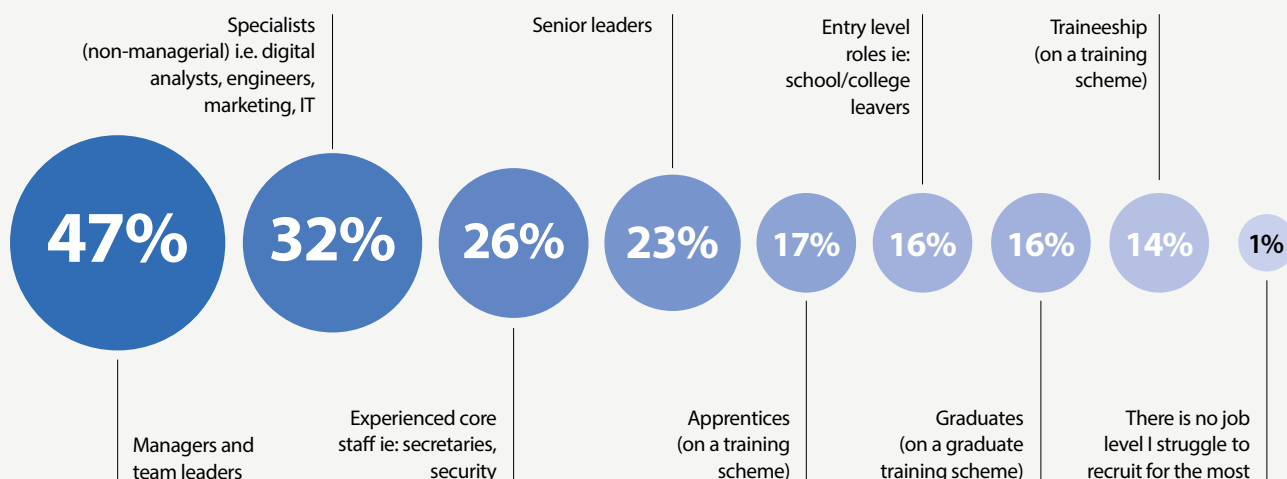
Reinforcing the key messages from other leading research, People Power found that **nine out of ten UK employers struggle to recruit** the skilled people they need. Almost half (47%) stated that it was the internal issues most likely to impact their future productivity.

Breaking this down by job level, employers identified **mid-level management positions** as the most difficult to fill.

There was low confidence that this would improve in the medium term, with **two-thirds of employers predicting that skills shortages would worsen or remain the same** in the coming three to five years.

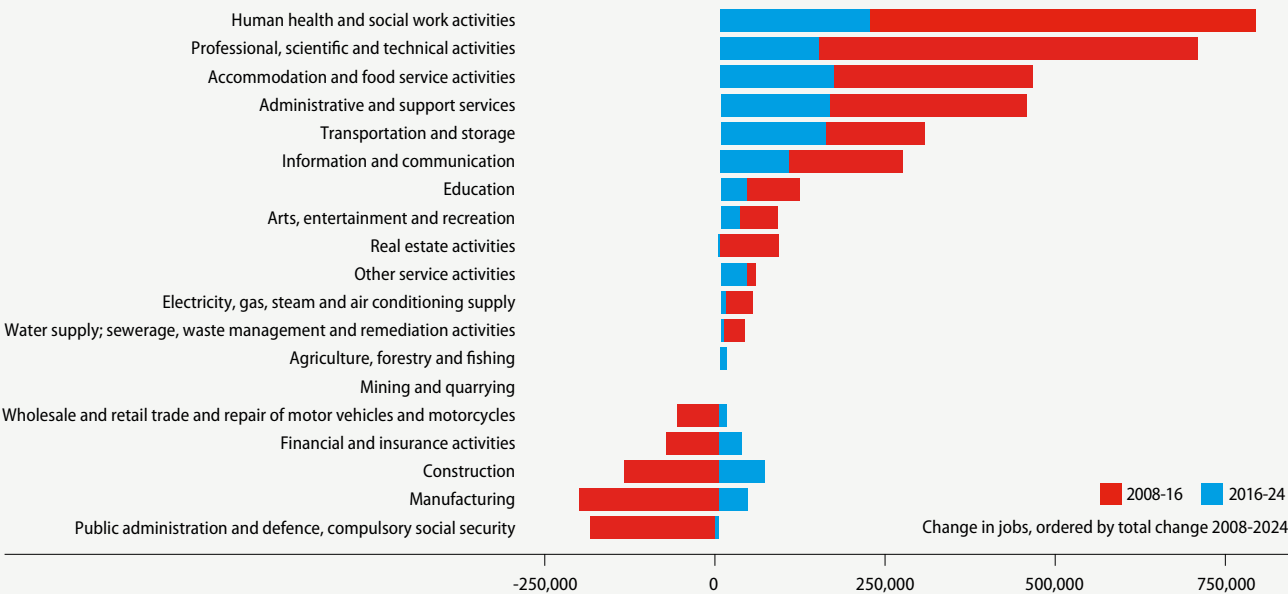
Brexit was a particular issue of concern in terms of exacerbating existing skills shortages. **A fifth of employers stated that Brexit has already had a negative impact** on their ability to recruit the staff they need.

### Which jobs levels do you most struggle to recruit?



# Does the UK economy have the skilled people it needs for the future?

## Jobs predicted to be gained or lost (2008-2024)

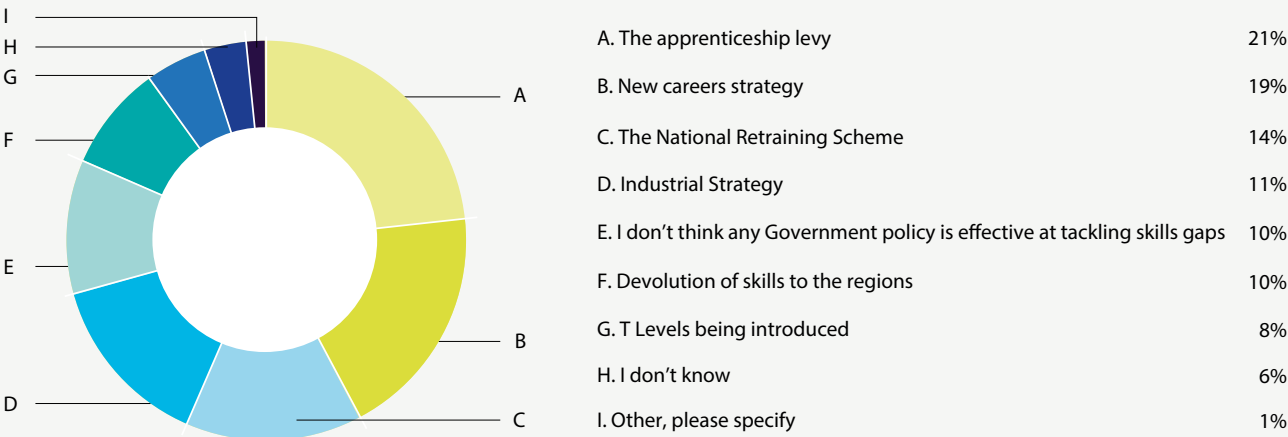


Looking ahead, People Power used economic modelling to predict the occupations and sectors most likely to grow or shrink by 2024.

The findings also showed that employers were also **ambivalent about government skills policy** with no

more than a fifth favouring any one piece of policy and 10% of respondents stating that no Government policy was effective at tackling skills gaps. This suggests that the Government has more work to do to get employers on board and better embed initiatives designed to tackle labour market challenges.

## Which piece of Government policy is most effective in tackling skills gaps?



**Kirstie Donnelly**, Managing Director City & Guilds

*The UK is facing a skills shortage crisis which, if goes unaddressed, could have a disastrous impact on UK businesses' ability to compete on a global scale post-Brexit. Careers advice needs to be redesigned for the modern world and government should consider broadening the apprenticeship levy to meet employer needs. An independent body should oversee skills policy to give much needed stability. Employers also need to take steps to shore up their own skills pipelines to prepare for Brexit.*

# Skills and Employment Survey 2017

(First findings published on 19 July 2018, with more to be published on 3 October 2018)

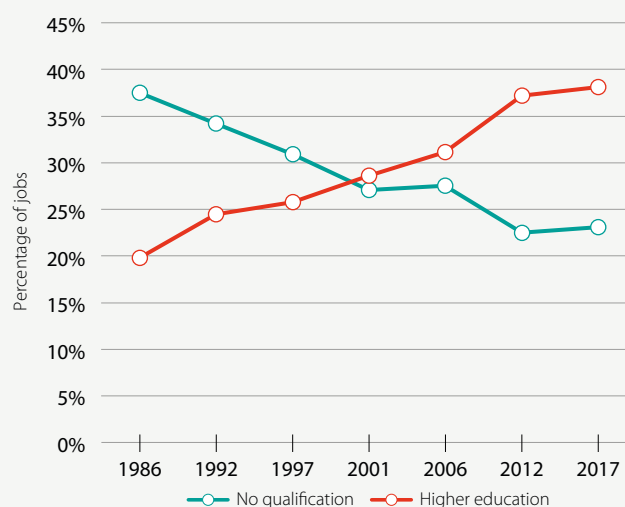
The Skills and Employment Survey 2017 (SES2017) is the seventh in a series of nationally representative sample surveys of workers. For the 2017 survey 3,306 workers in Britain were interviewed for an hour about the skills they use at work and the quality of their jobs, thereby giving the workers' perspective. For more information go to [www.cardiff.ac.uk/ses2017](http://www.cardiff.ac.uk/ses2017).

The findings suggest that the growth of skills demand observed in previous surveys has slowed down and some indicators suggest that the **demand for skills may be falling**. Since 2012 literacy and numeracy skills, for example, have declined in importance, **jobs requiring higher education qualifications have plateaued**, the fall in jobs requiring no qualifications has ground to a halt, and the **time spent learning on-the-job and getting training have fallen**. This is at a time when much emphasis has been placed on increasing the supply of skills in the face of disappointing productivity growth and mounting concern over skills shortages.

This slowdown is at odds with the idea that that the fourth industrial revolution is transforming today's workplaces and that these changes are at their most effective when in the hands of skilled workers. Instead, we find that the incidence of technical change has fallen sharply across all occupational groups since 2012 and that **these changes have become less skills demanding**. Not so long ago, computerised equipment was only used by the most educated, but as this technology has been incorporated seamlessly into many devices it has now become commonplace. This is reflected in our data with a **falling proportion of survey respondents stating that additional computing skills would enable them to do their job much better**. The proportion roughly halved from 25% in 2001 to 12% in 2017.



Qualification requirements of jobs, 1986-2017



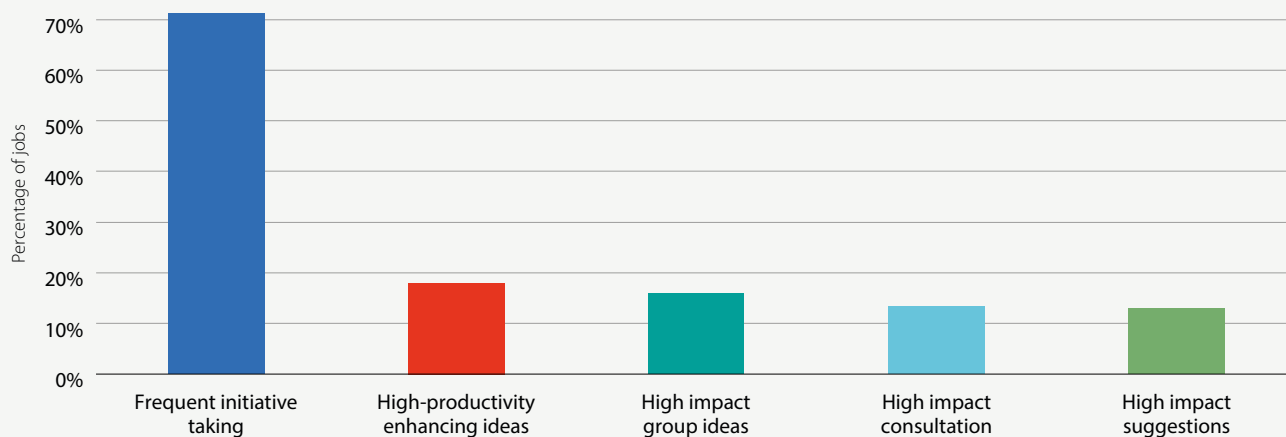




However, the 2017 survey suggests that the **skills, ideas and creativity of the existing workforce could be utilised more effectively**. Almost a fifth (18%) of employees identified changes which, if implemented, would make them a great deal more productive and one in eight (13%) made suggestions that contributed a great deal to making work more efficient. Similar proportions reported that employees had a great deal of impact on improving work processes, products or services through problem-solving groups and consultation meetings with management. Even more (71%) claimed to have taken the initiative to make such improvements on more than one occasion.

This suggests, not a shortage of skills, but rather a **reservoir of untapped potential**. But the results also suggest that some employers are better at tapping into this than others. The survey shows that channels to greater productivity are at their most effective when employees have: more autonomy to decide how to do their jobs; more supportive line management; more opportunity to express their views; and are appraised in ways which affect their earnings and/or training opportunities. However, **since 2006 these productivity drivers have become less prevalent**, precisely at a time when productivity growth has been sluggish and the economy would have benefited from them most.

#### Utilising workers' productivity enhancing Ideas, 2017



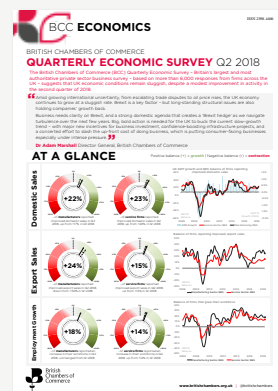
**Alan Felstead**, Research Professor, Cardiff University

*The Skills and Employment Survey series offers a wealth of evidence about skills used at work and the quality of the working environment. But what makes the series special is that it gives the workers' perspective on these important issues and therefore offers a counter-balance to the more numerous employer surveys out there.*

*To find out how your job compares with others go to [www.howgoodismyjob.com](http://www.howgoodismyjob.com), where you will find an online quiz based on the survey.*

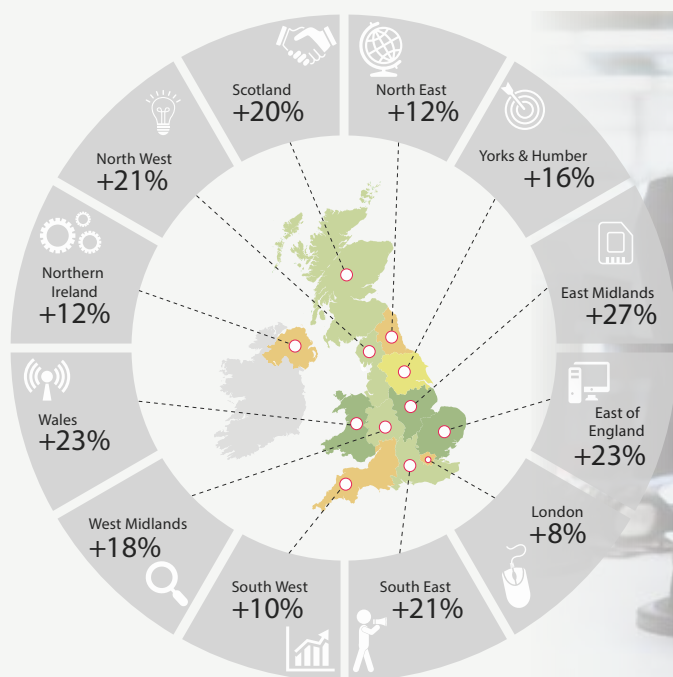
# BCC Quarterly Economic Survey (Q2 2018)

(Published July 2018)



- In Q2 2018, the percentage of service sector businesses attempting to recruit rose from 50% to 60% since the Q1 figures reported in our previous bulletin. Of those the percentage of **firms in this sector reporting greater recruitment difficulties rose from 60% to 63%.**
- The percentage of manufacturers that attempted to recruit in the last six months also rose from 67% to 77%, with a **growth in those facing recruitment difficulties from 69% to 71%** since the last quarter.
- In the service sector, professional and managerial roles are the leading area of hiring difficulties (54%)
- In this sector, skilled manual labour was the leading area of recruitment difficulties at 69%.

## Service sector training investment (Q2 2018 compared to Q1 2018)



**Adam Marshall**, Director General of the British Chambers of Commerce (BCC)

*Amid growing international uncertainty, from escalating trade disputes to oil price rises, the UK economy continues to grow at a sluggish rate. The availability of skilled staff remains the biggest issue that firms face. Unless the Government gets a handle on the disarray in the training and apprenticeship system and sets out a clear immigration policy that enables firms to cover vacancies, the economic potential of many areas across the UK will continue to be held back.*







## 10 jobs that didn't exist 10 years ago

- The range of jobs and the nature of work are changing more rapidly than ever before and we are often told that many young people will **work in entirely new roles**.
- Whilst it is almost impossible to predict exactly how these changes will affect the labour market, the World Economic Forum have illustrated the pace of change in a report illustrating ten jobs that **did not exist a decade ago** but are now major sources of employment.
  - **App Developer** – The iPhone arrived in 2007 and now half the world's adults have smartphones.
  - **Social Media Manager**
  - **Uber Driver** – During 2015 alone Uber doubled the number of its drivers in the US.
  - **Sustainability Manager**
  - **Cloud Computing Specialist** – The Cloud is now used by more than half of US businesses.
  - **Big Data Analyst**
  - **Drone Operator** – Sales of Unmanned Aerial Vehicles (UAVs) are expected to reach 125,000 per year by 2020.
  - **YouTube Content Creator**
  - **Driverless Car Engineer** – Most cities surveyed expect and support commercialisation of driverless cars within the next ten years.
  - **Millennial Generation Expert**
- The importance of managing the **impact of the Fourth Industrial Revolution** is becoming increasingly recognised in political circles. Following excellent work from Scotland's Centre for Work Based Learning, in England, the Education Select Committee has recently launched an inquiry into the Fourth Industrial Revolution. We will feature more information and updates on this issue in future bulletins.



*One estimate suggests that 65% of children entering primary school today will ultimately end up working in completely new job types that aren't on our radar yet.*

**World Economic Forum, Human Capital Outlook**

# Spotlight on: **Digital technology**

Written in partnership with techUK, which represents more than 950 organisations in the sector from small businesses to FTSE 100 companies.

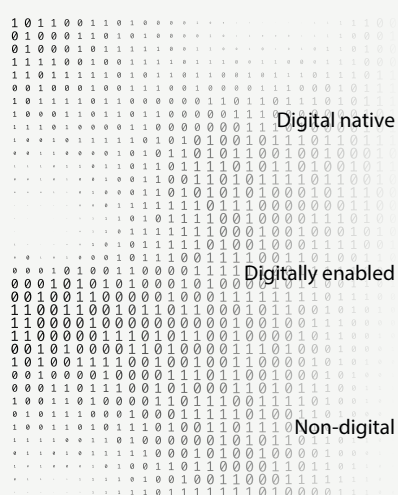


### **Why is digital technology important?**

Digital technology is **revolutionising how the UK works**, transforming the way that public services are delivered and driving the evolution of new business models, markets and processes. It is fundamentally changing the way we socialise, entertain ourselves, shop and bank. **Digital technology now pervades all sectors and underpins our daily lives.** As a result, digital skills

are now required across the whole UK workforce, from healthcare to hospitality, from manufacturing to teaching.

Digital technology is a global industry and one in which the UK is a global leader. **There are 1.64 million digital tech jobs in the UK**, our tech sector is growing twice as fast as the non-digital sector and is creating new jobs at twice the rate.<sup>1</sup>



**THE MORE DIGITALLY SKILLED A UK JOB IS, THE HIGHER ITS AVERAGE ANNUAL SALARY**

£42,578

£35,277

£32,477

**Average annual salary of jobs** (Source: Adzuna 2018 in Tech Nation 2018)



### Who makes up the current workforce?

With such a high pace of growth, the ability to **recruit and retain talent from around the world** has been crucial to the industry's success. Recent analysis for techUK by Frontier Economics showed that **18% of the digital sector's three million workers are foreign born**, with one third of those coming from EU countries. Foreign-born workers also accounted for 45% of net employment growth between 2009 and 2015 with EU-born workers contributing the most, in relative terms, to the sector's success.

Brexit presents the digital technology sector with **a mixture of threat and opportunity**. In terms of threat, we risk cutting off access to essential technical skills, but on the plus side we have an unprecedented opportunity to implement a complete redesign of migration policy. This could mean better use of existing visas, simplified and streamlined skilled migration and access to a wider pool of international talent.

### What kind of skills does the sector need?

The success of the UK tech sector in the last decade has been **built on this access to global talent** in many forms – from entrepreneurs looking to start their next company from the UK to skilled tech workers in roles such as data analytics, cyber security and software development. Meanwhile, tech specialists in UK universities have driven the creation of new ideas and commercial spinouts.

The skills needed are just as diverse as the sector itself. The crucial role of big data and analytics provides a clear example. The UK big data and analytics industry is expanding at an astonishing pace. As a result this sector is expected to count for the largest proportion of UK digital vacancies in the short to medium term. A survey of techUK members found that **62% will require more big data capabilities over the next five years**.<sup>2</sup> In 2016, techUK identified eight key roles that will be required for the UK to implement its big data strategy. These include Chief Data Officers, Data Infrastructure Engineer, Data Integration Engineer, Big Data Developer, Solutions Architect, Data Scientist, Data Analyst and Visualisation Expert.<sup>3</sup>



### Digital technology skills migration KEY FACTS

- The impact of EEA migrants on the tech sector has been strongly positive. The **total Gross Value Added per EEA worker as of 2015 was £103,000**, almost double that of non-tech sector workers.
- With approximately 184,200 EU-born workers in digital producing and digital using sectors, **the direct tax contribution totals almost £2.5 billion** each year, on top of business taxation including Employer NIC.
- 78% of respondents to a techUK survey stated their EEA workforce held at least a **Level 6 (degree apprenticeship, degree with honours) qualification**.
- EU tech talent is highly remunerated – **the average salary of EU migrants in tech is £45,000 - £80,000 per annum**.
- There is **no evidence** that EEA and non-EEA migration workers have undercut skills and training of UK workers.

## Spotlight on: Digital technology

If the sector is to flourish the **UK needs a strong pipeline of individuals** with the right skills.

### *What is the size of the skills shortage in the sector?*

There are an estimated **600,000 tech vacancies in the UK**, a figure predicted to jump to 1 million by 2020.<sup>4</sup> This is **costing the UK economy an estimated £63 billion a year** in lost additional GDP.<sup>5</sup>

**Fifty-two percent of digital businesses report that digital vacancies are hard to fill,**<sup>6</sup> while 82% of scale-ups could grow their companies if they could find people with the skills they need<sup>7</sup> and 76% of British firms right across the economy face a digital skills shortage in their workforce.<sup>8</sup>

The supply side picture is not encouraging: 30% of workers doubt their need or ability to address the skills gap in the future,<sup>9</sup> 11.3 million people have limited abilities online.<sup>10</sup> Moreover, with only 17% of the UK's IT specialists being female<sup>11</sup> we are barely tapping half our potential workforce. The UK's current and future workforce *must* be equipped with the necessary skills for the digital economy to continue to thrive.



## RECOMMENDATIONS from TechUK

We are faced with a perfect storm. On the one hand we have **demand driven by the relentless pace of technology development**, a successful and growing domestic sector and rapid uptake of digital technology across the wider economy. On the other hand we are **only partially meeting our immediate skills shortage** through migration and face a bottleneck after Brexit if our pipeline of talent from the rest of the EEA is cut off or reduced. We also face a stark long term skills shortage that will not be met by our domestic STEM pipeline. techUK recommends the following actions for business and government:

**A clearer career path into digital technology:** More clarity is needed on what a career in tech entails and the route to jobs in the sector. Prospective employers need to be more visible and partner with academic institutions to make pathways into tech clearer for students.

**Better lifelong learning:** Whilst securing a future talent pipeline, we must also upskill our existing workforce. The UK ranks 18<sup>th</sup> out of the 29 OECD countries in terms of adult literacy, numeracy or both.<sup>12</sup> We need to improve both basic and digital skills.

**Empower local networks:** Regional skills gaps across the UK are very different, with some focused on basic digital skills and others seeking specialists. More should be done to empower local communities to engage with industry and academics to meet the skills needs of their region.

**Access to talent:** The UK needs sustained access to the best global talent to ensure our digital economy thrives. We need to improve our own tech talent pipeline and employers must be able to bring in the 'brightest and best' into the UK as students, researchers and business professionals.

## Case study

# Cardiff University National Software Academy



One organisation addressing skills shortages in the tech sector head on is Cardiff University, who founded its innovative National Software Academy in 2015.

Delivered in partnership with local tech businesses, its staff are drawn from both academic backgrounds and from industry. As the Academy's Manager, Matthew Turner, explains they teach in a very practical way:

*“Our teaching methods are very different from a traditional course. Each semester starts with around six weeks of intensive tuition, using problem-based learning and real world examples to bring the topic to life.*

*This is followed by four weeks of project-based learning, working in teams to deliver tech projects to real*

*businesses in a variety of different sectors. Students present these directly to clients and get real feedback.”*

Together with paid summer placements, business lunches, employer seminars and an intensive 10-week holistic project delivered for a real business in their final year, it is hardly surprising that the majority of the Academy's final year students already have job offers from local businesses before they have even completed the course.

If we are to truly address skills shortages and support individuals to have the skills they need for the changing workplace, more FE and HE provision needs to be taught through intensive employer engagement and project based learning.





# Data centres

Although often hidden from view, data centres provide the **core digital infrastructure that underpins our modern economy**. All sectors rely on data centres to transmit, receive, store, process and manage digital data securely and efficiently. As individuals we rely on data centres when we work, interact with government and, increasingly, socialise. Each data centre supports a complex and dynamic ecosystem of businesses. These help the UK to enjoy its significant trade surplus in digital exports.

Data centres bring together the **skills of a number of different sectors** including construction, IT, communications, facilities management and engineering. As a result they have very complex skills needs, from network design to air conditioning, from energy management to generator maintenance. The UK data centre sector cannot currently meet its skills needs with domestic talent and at least **one in five key technical roles are filled by non-British staff**, who

provide expertise in areas like connectivity, acquisition, engineering, operations and construction. A significant proportion of technicians and engineers in data centres come from Eastern Europe and businesses are concerned that this essential pipeline of talent will be truncated or severely reduced after we leave the EU. **They are already finding it more difficult to attract EU staff.**

The core requirement is also changing, from pure mechanical and electrical engineering skills to a **broader range of technical competences** covering areas like IT and connectivity. Coupled with an ageing population of engineers, the sector faces both an immediate and a long term skills shortage.

Data centre operators report a large number of **skills and capabilities that are hard to recruit for** or jobs where there are long lead times on vacancies. These roles include: design engineer, network engineer, electrical / mechanical facilities engineer, operations manager,





energy manager, shift manager, technical business development manager. They struggle particularly to source individuals with experience in critical environments and engineers with computer science backgrounds or with a wide breadth of skills across platform, application, storage and network.

The data centre sector is engaging in work to help reduce future skills shortages. Projects include developing

bespoke apprenticeship standards,<sup>13</sup> working with third parties on outreach to those in education, raising awareness of the sector's critical role, encouraging operators to take steps to recruit and retain more women,<sup>14</sup> improving the level of professional registration in the sector,<sup>15</sup> clarifying career paths within the sector<sup>16</sup> and developing role models. Most importantly **the sector must position itself as a career destination of choice.**<sup>17</sup>

### Andrew Stevens, President and CEO, CNet Training

*It's no secret that the data centre sector reports being beset with a skills shortage. And while this is broadly true there's a fundamental misunderstanding that what we actually have is a perfect storm of pressing talent issues. We have a shortage of data centre specific skills driven by rapid technological development, a labour shortage as qualified people are drawn away by more well-known sectors such as manufacturing and construction, and a diversity problem in that our labour pool is limited and without a dedicated pipeline. This is not a suite of issues to be viewed as a future challenge – these issues are here, now and are recognised as an impediment to growth and innovation. The responses must come from a collaboration between industry, apprenticeship providers, higher and vocational education, schools and industry representative groups. If ever there was time to get smart about a multi-partisan approach, it is now. CNet is proud to be involved in building relationships to enable a robust collaborative response.*



### Forthcoming relevant publications

Date	Organisation	Publication
August 2018	Royal Institute of Chartered Surveyors (RICS)	UK Construction and Infrastructure Market Survey – Q2 2018
August 2018	Federation of Master Builders (FMB)	State of Trades Survey – Q2 2018
3 October 2018	Cardiff University / Institute of Education	British Skills and Employment Survey
October 2018	British Chambers of Commerce (BCC)	Quarterly Economic Survey
November 2018	RICS	UK Construction and Infrastructure Market Survey – Q3 2018
November 2018	FMB	State of Trades Survey – Q3 2018
November 2018	Edge Foundation	Skills Shortages Bulletin 3
Autumn 2018	CBI	Education and Skills Survey 2018
Autumn 2018	Education & Employers / Edge / NEU	Publication of research on employability skills
January 2019	BCC	Quarterly Economic Survey
February 2019	RICS	UK Construction and Infrastructure Market Survey – Q4 2018
February 2019	FMB	State of Trades Survey – Q4 2018

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- Tech Nation, Tech Nation Report 2018, June 2018 – <https://technation.io/insights/report-2018/>.
- For more information about the National Software Academy at Cardiff University, visit <https://www.cardiff.ac.uk/software-academy>.

## Endnotes

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13. Trailblazer Apprenticeships Explained
14. So You Want To Employ More Women?
15. [https://www.techuk.org/images/Professionalism\\_project\\_description.pdf](https://www.techuk.org/images/Professionalism_project_description.pdf)
16. Keeping your options open (Oh my God I forgot to study maths!)
17. Why work in a data centre?



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