



Microsoft Cloud Skills Report:

Closing the Cloud Skills Chasm



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Introduction

We are moving, at pace, into the fourth industrial revolution, a period of time recognised by the blurring of lines between physical, digital and biological worlds, underpinned by a range of technological innovations. The arrival of the Internet of Things, advanced analytics, artificial intelligence and machine learning mean that organisations are having to fundamentally rethink how they engage customers, empower employees, optimise operations and transform products and services. A raft of disrupters have entered established markets and shaken established business models to their very core, powered by mass-scale computing, unprecedented processing power and seemingly unlimited storage. Organisations that were once the giants of their industries have become the also-rans whilst start-ups have reached Billion-Pound valuations in as little as two years where it once took 20. Recent technological innovations have levelled the playing field for businesses in ways not seen since the start of mechanisation.

Whilst this has created significant challenges for established organisations, this forcing function has made it imperative for organisations to think beyond their established business models. This in turn is creating huge opportunities. Where Rolls-Royce sold aircraft engines it now sells flight miles; where RAC was once a reactive roadside assistance organisation, it is now also a pre-emptive vehicle maintenance service; McDonalds is serving drive-through customers faster and more accurately thanks to the use of artificial intelligence.

The digital transformation journeys that many organisations are embarking on are unique, each presenting their own challenges. However, one commonality is the move to the cloud for some or all of the technological platforms underpinning these transformations. As a result, many organisations face a clear and present challenge that can stall their journeys – finding staff or suppliers with the appropriate cloud skills to successfully accomplish their transformations.

It is to be expected that with the dawn of any new industrial revolution that it will take time to ensure that there is a sufficiently skilled workforce to meet the demand for people with those skills – factories didn't have a fully-skilled pool of labour at their disposal when machinery was first introduced – but in an era of mass globalisation, lower barriers to entry and customers who are less loyal than ever before, the need to evolve business models and do so quickly has never been more critical. Those organisations that are forced to stall their transformational journeys due to a lack of skills will find themselves facing significant challenges. Indeed, they may find that by the time they are able to meet the demands of both customers and employees, the market has moved on, rendering them irrelevant.

This need to find the right skills to drive digital transformations was the inspiration for this report – to understand how UK organisations perceive the value of cloud skills, the challenge in engaging people with the skills they need, either directly or indirectly, and their expectations on how the supply and demand for cloud skills will change in the coming years.

To this end, we surveyed 250 technical leaders in the UK who are working within medium and large organisations. Respondents were responsible for, or actively involved with, IT skills recruitment or the technical evaluation of external providers.

A few key findings of note from the pages that follow include:

- **Cloud Skills are critical to transformational success:** more than 80% of respondents think that having the right cloud skills will be important or critical to their digital transformation;
- **Finding the right people is a challenge:** 38% of respondents who had been involved in recruiting people with cloud skills in the past 12 months said it was difficult to find the right skills, potentially jeopardising the digital transformation programmes of more than 3,500 mid-large UK organisations;
- **Companies are upskilling their own staff to meet demands:** the most common approach to meeting cloud skills needs is to train existing staff (60%). However, more than half (53%) expect to use external partners and almost half (46%) hope to recruit new people with cloud skills;
- **Expectations on cloud skills availability are misinformed:** a strong majority think it will be about the same (30%) or easier (48%) to find the cloud skills needed in two years' time. Only 14% think it will be harder. Data from a wide range of sources, however, indicate that the skills gap continues to widen;
- **The Partner Premium:** a majority say that formal cloud certifications are important (63%) when selecting partners to provide cloud-based consulting or services. Furthermore, when engaging staff for important cloud projects, almost half (48%) say they'd expect to pay more for resources with relevant cloud certifications;
- **The Gender Imbalance:** On average, respondents reported that the gender mix amongst technical IT staff is 20% female, 80% male. More than half of respondents stated they had no policy or plans in place to address this issue (35%) or didn't know what actions were being put in place (23%).

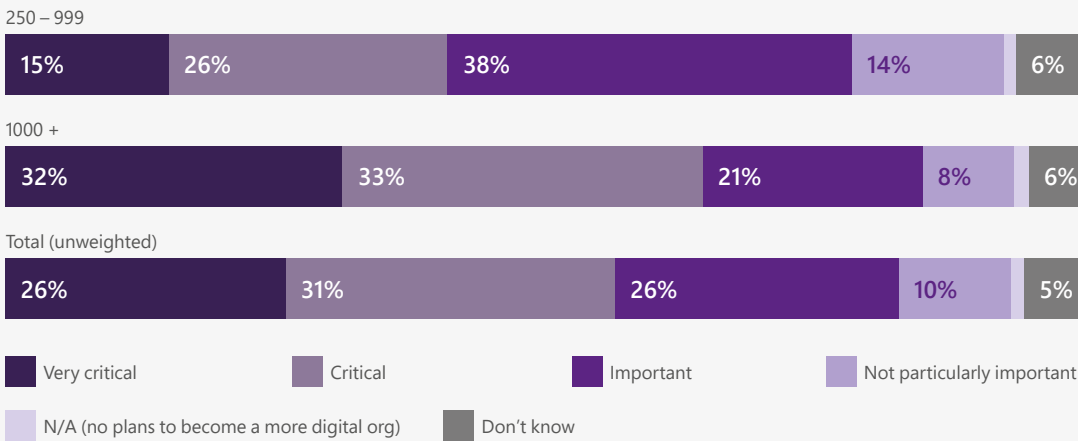
Each of the above findings present organisations with significant challenges – respondents believe that cloud skills are a key component of their transformation journeys yet many struggle to find suitably skilled candidates. This in turn pushes up costs, either through training or paying a premium for access to appropriately skilled workers, all whilst the gender balance remains woefully inadequate. Furthermore, respondents' expectations that these challenges will improve over the next two years appear worryingly misguided and appear out of touch with reality.

This report provides readers with an opportunity to better understand the cloud skills landscape within the UK as it exists today, the challenges that organisations will face in the years to come, and the steps Microsoft is taking to help close the cloud skills chasm.



The role of cloud skills in digital transformation

Will having the right cloud skills be critical to your organisation's digital transformation?

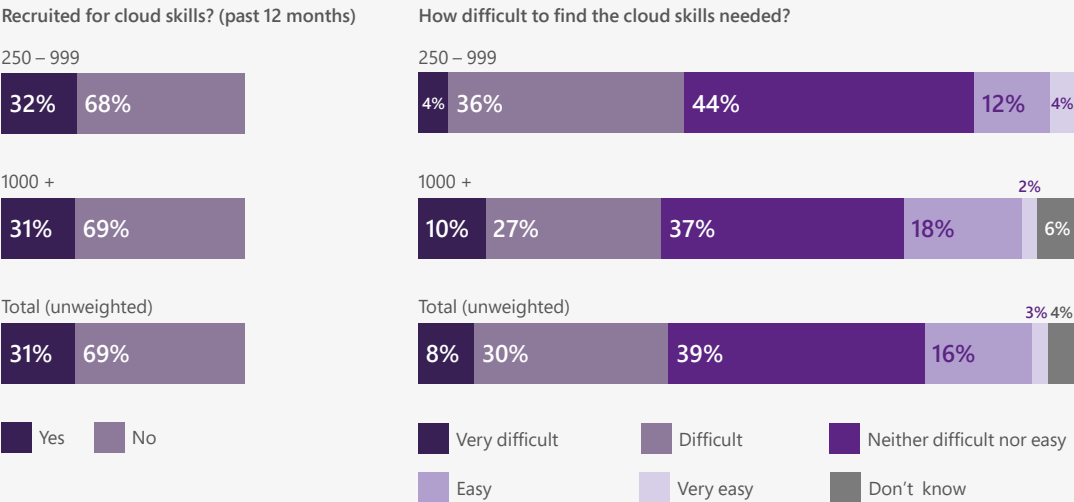


Q. In your opinion, how critical will having access o the right cloud skills be to your organisation's plan to transform into a digital business (or a more digital organisation)? (n=250)

To understand the value of cloud skills to UK organisations, we asked respondents how critical they consider cloud skills to their organisations' digital transformation. Overwhelmingly, respondents believe they will play a vital role, with 83% stating they are important or critical. A larger proportion of respondents in organisations with 1000+ employees felt that these skills would be 'very critical' (32% vs 15%). This could well be due to larger firms being saddled with a broader tapestry of siloed, legacy systems that require a significant degree of re-engineering in order to become fit for purpose in a cloud-enabled economy. Interestingly, only 2% of respondents stated that their organisations had no plans to become a more digital organisation, showing the extent to which British businesses are embracing digital transformation strategies.

Finding appropriate skills

Cloud skills recruitment – how easy was it to find the right skills?



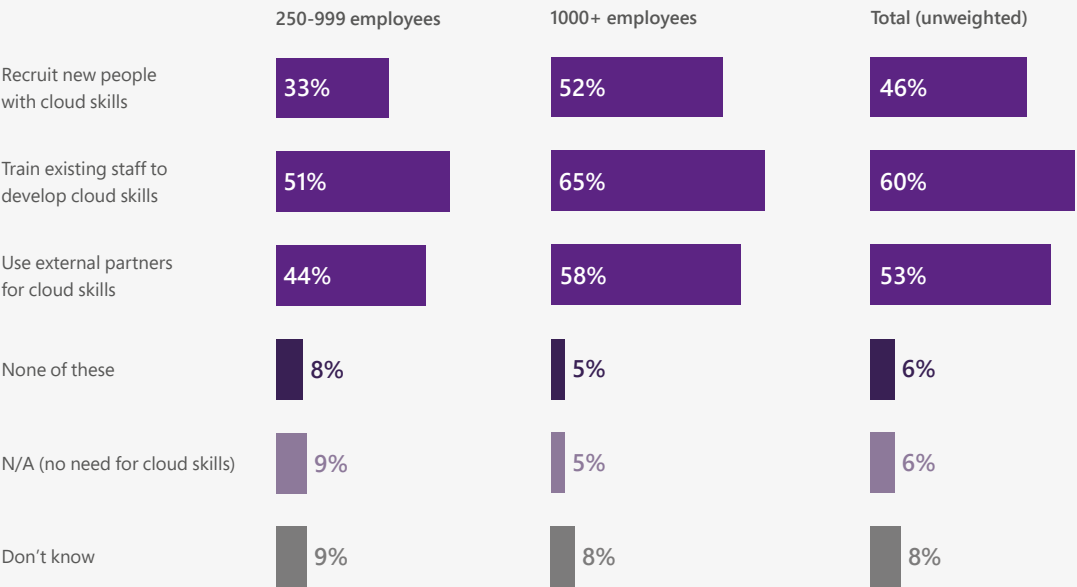
The median time to recruit the most recent cloud-skilled person (time from start of search till offer accepted) was 8-10 weeks.

Q. In the past 12 months, have you been involved recruiting people into your organisation, where cloud skills and experience were a key part of the requirements (permanent or contract)? (n=239, excl. DK) [Those involved in cloud skills recruitment] Q. How difficult or easy has it been, over the past 12 months, to find the cloud skills your organisation was looking for? (n=74, excl. DK)

Given the perceived critical nature of cloud skills on the digital transformation strategies of respondents' organisations, we then asked whether respondents had been involved in recruiting people with cloud skills over the past 12 months and if so, how easy it was to find people with the right skills. Overall, almost a third had actively sought to recruit team members with cloud skills within the last year. Of those, 38% of respondents found it difficult or very difficult, with a larger proportion of organisations with 1000+ employees finding it more difficult. These numbers, if scaled nationwide, present a significant challenge of UK businesses – with almost 10,000 UK businesses employing more than 250 staff, this could mean that over 3,500 organisations in the UK could be hampered by a lack of qualified staff.

This problem is not just a challenge for the UK, it is a global phenomenon. As stated in our own book, [A Cloud for Global Good](#), if companies are to thrive in the digital, cloud-driven economy, the skills of employees must keep pace with advances in technology. In Europe, a 2013 survey found that skills shortages caused major business problems for a third of EU employers, whilst in the manufacturing sector in the United States, as many as 2 million jobs could go unfilled during the next decade because of a shortage of people with the right technical skills. In China, McKinsey estimates that demand for skilled labour could outstrip supply by 24 million people by 2020. Shortages like these pose serious competitive issues for companies and threaten the long-term economic health of countries around the world. More than that, they threaten to widen the income gap between those who have the skills to succeed in the 21st century and those who do not.

Approaches in 2017 to meet organisations' cloud skills needs (multiple response)

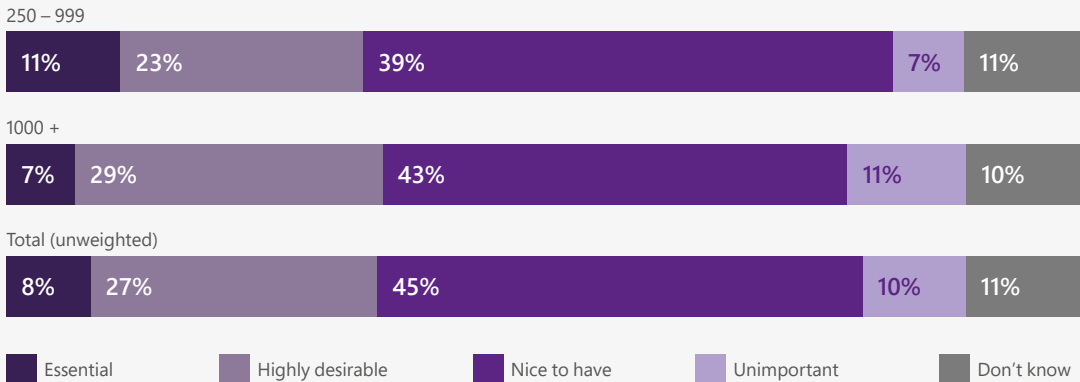


Q. Which of the following approaches do you expect your organisation to take during 2017 to meet your need for cloud skills? Please select all that apply. (n= 250)

With recruiting appropriately skilled staff proving to be a challenge for many organisations in the UK, we asked respondents how they were planning to approach this issue in 2017. Despite the difficulties previously noted, almost half (46%) stated that they planned to recruit new people with cloud skills over the coming 12 months. A larger proportion (60%) expected to train existing staff to develop cloud skills and just over half (53%) stated they planned to use external partners for cloud skills.

The value of certifications

How important are recognised cloud certifications, when recruiting?

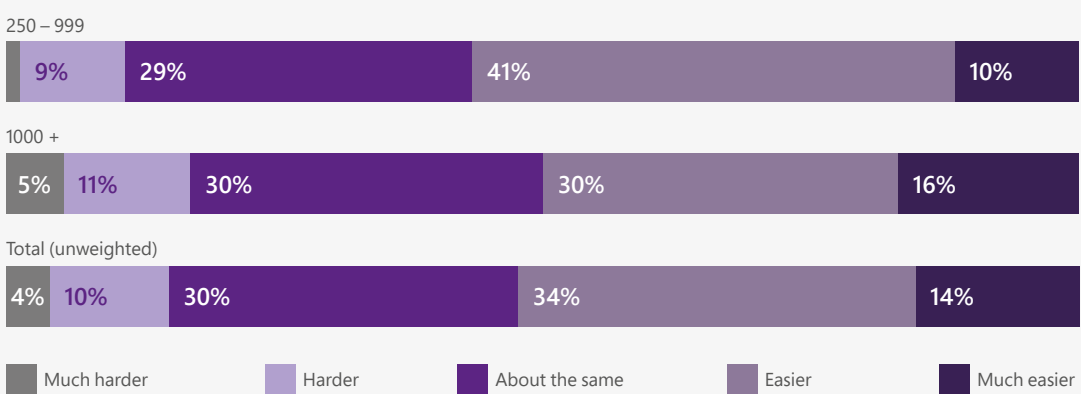


Q. When your organisation is recruiting for cloud skills, how important would you say are recognised cloud certifications, when considering different candidates? (n=228, excluding NA 'don't recruit cloud skills')

We also wanted to understand the value that certifications played during the recruitment process. Whilst a significant minority (45%) felt that certifications are a ‘nice to have’, more than a third of respondents (35%) stated they are highly desirable or essential. This proportion of respondents requiring certifications appears to be surprisingly low – could this be a further symptom of the challenges of finding people with adequate skills in the first place? In a fiercely competitive marketplace where finding the right people regardless of official certifications is a challenge, are organisations making do? Either way, with such a significant number of responses ranging from ‘nice to have’ through to ‘essential’, one thing is clear – those people that do have certifications will enter the interview room with an advantage.

The Cloud Skills Chasm

In two years’ time, will it be harder or easier to find cloud skills?

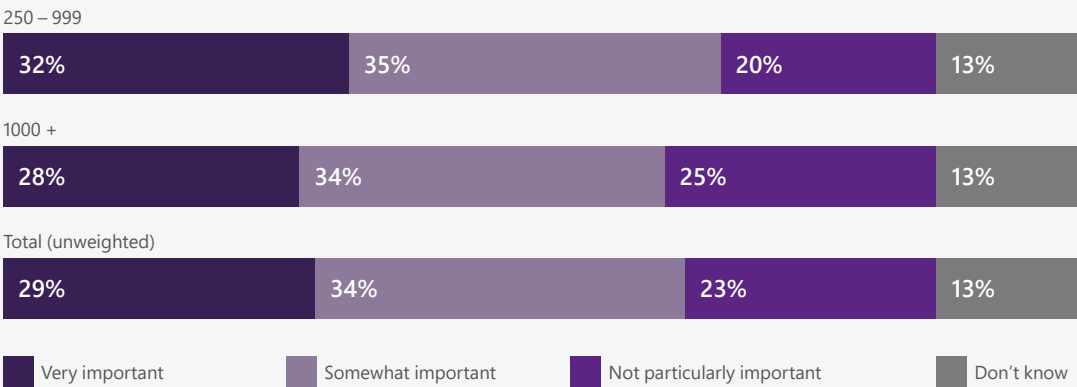


Q. Thinking ahead to two years from now – do you think it will be harder or easier than it is today, to find the cloud skills your organisation will need? (n=236, excluding NA and DK)

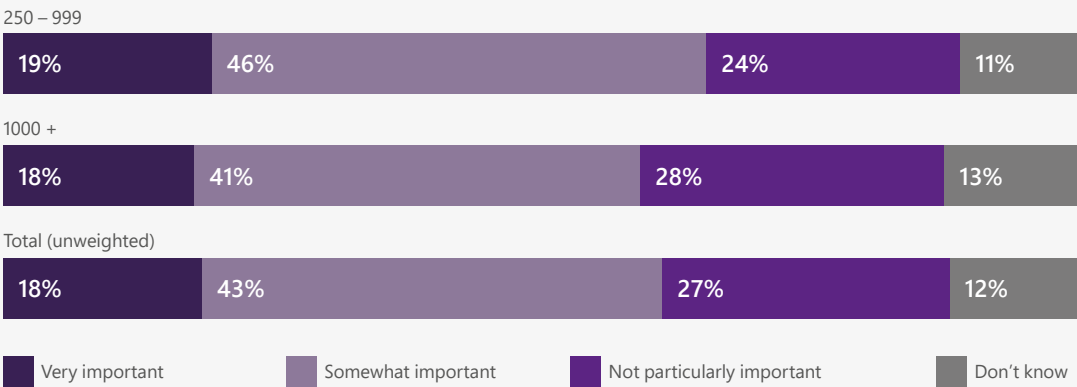
Given the challenges that organisations currently face in recruiting cloud talent, we wanted to understand respondents’ expectations on how the situation would change in the near future. The responses suggest a significant gap between perception and reality. Almost half of respondents (48%) stated they believe it will be easier (34%) or much easier (14%), with 30% expecting the situation to remain broadly similar to the challenges they face today. Projections showing the gap between the number of people with cloud skills vs the number of roles available continue to show that this gap will continue to widen for many years to come. For example, according to the Hays Global Skills Index, last year marked the fifth consecutive year of a rising UK skills shortage, particularly in the technical engineering and specialist technology roles into which cloud skills fall. As such, the challenges of finding people with the skills to enable organisations to bring their digital transformation strategies to life are only set to worsen. The fact that this is only recognised by 14% of respondents should be a cause for concern.

The partner premium

Importance of cloud certifications when choosing partners – company-wide certifications



Importance of cloud certifications when choosing partners – individual team member certifications

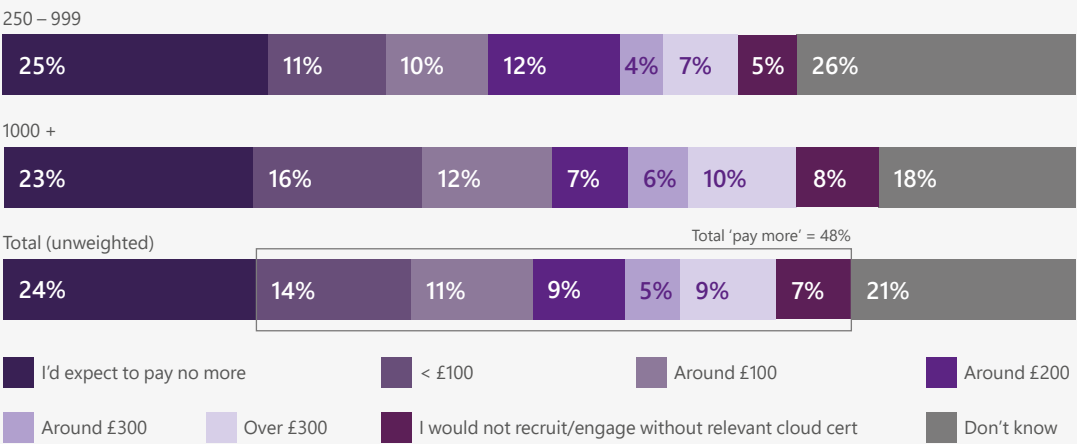


Q. When you think about choosing partners to provide cloud development, integration or other services (e.g. SIs or service providers) – how important do you think both company-wide and individual team member cloud certifications are? (n=231 & n=229, excluding NA 'don't engage partners')

As mentioned previously in this report, more than half (53%) of respondents plan to use external partners for cloud skills in the year ahead. We therefore wanted to understand how respondents view the skillsets of these organisations and the value they place on cloud certifications for third-party resources.

In comparison to internal staff, respondents placed a higher importance on certifications for suppliers. Almost two-thirds (64%) of respondents felt that it was either 'somewhat important' (34%) or very important (29%), with less than a quarter (23%) considering company-wide certifications to be unimportant. A further 61% felt that it was important for individual team members to be certified.

How much more, if anything, would you expect to pay for relevant cloud technical certifications?



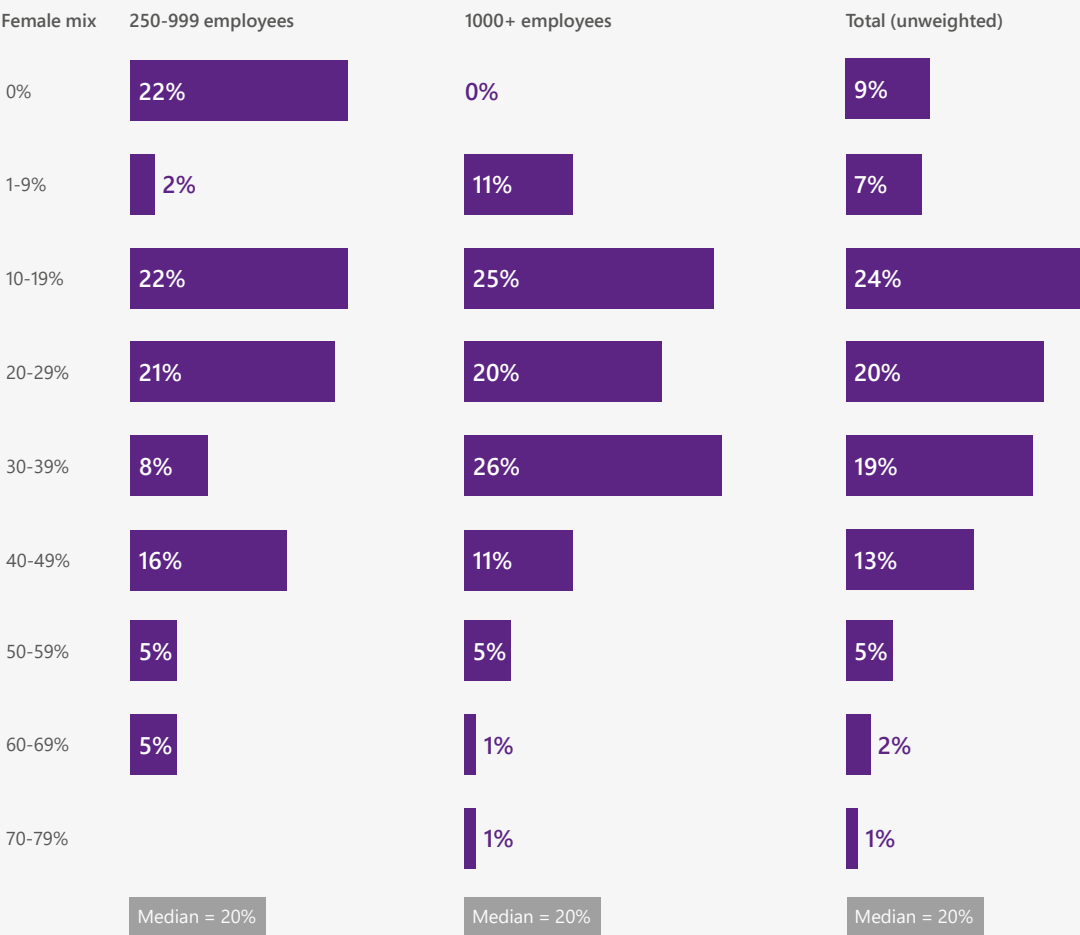
Q. Assume you were engaging technical staff (contractors or external developers/consultants) to work on an important cloud project for your organisation. How much more, if anything, would you expect to pay for someone who was formally certified in the relevant cloud technologies, compared to someone who had no relevant cloud certification? Please select which of the following is closest to your view, in terms of a day rate or equivalent cost. (n=221, excluding NA 'don't expect to recruit for cloud projects')

With heightened expectations placed on suppliers, we asked whether respondents would expect to pay more for services delivered by external staff with relevant cloud certifications.

Almost half (48%) of respondents stated that they would expect to pay a partner premium for working with organisations that have relevant cloud certifications, with less than a quarter (24%) stating they would not. The additional daily rate respondents were comfortable paying ranged from less than £100 to more than £300 for each formally certified contractor, with a median of £100. For organisations that provide cloud services, this premium could yield significant returns if all members of customer-facing staff held the relevant certifications.

The gender imbalance

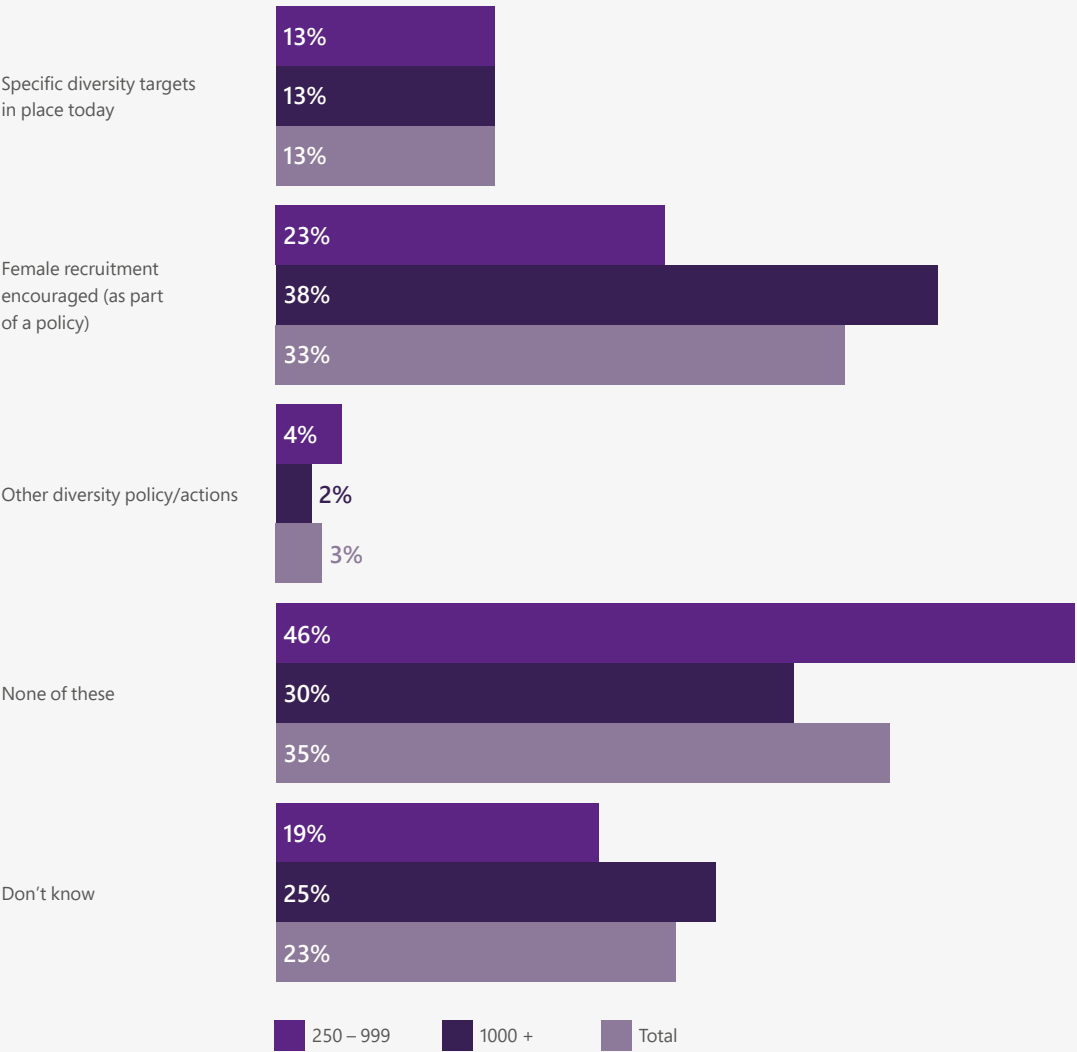
Current female/male mix across organisations’ overall technical IT staff



Q. What would you say is the current female/male mix across all the technical IT staff in your organisation? (n=163, excludes those with no technical staff and don't know)

With cloud skills at such a premium and the anticipated shortfall of available talent, this puts an increased pressure on the cost of talent. If the cost of labour increases, companies can expect the cost of transformation to increase in the coming years. Based on the responses, women are still chronically under-represented. On average, the gender mix amongst technical IT staff was 20% female, 80% male. Only 21% of respondents said the female mix within their organisation was 40% or greater.

Actions in place to improve female/male diversity mix



Q. Does your organisation have any targets, programmes or policies to improve the female/male diversity mix within your UK technical workforce? Please select all that apply, if any. (n=237, excl. no technical staff)

Whilst the gender imbalance reported by respondents is concerning, the actions organisations are taking to address this make for worse reading. A third of respondents stated that they have policies in place to encourage female recruitment. However, more than a third (35%) of respondents said they had no policies or plans in place to address this issue (which was as high as 46% for organisations employing 250-999 staff). Almost a quarter (23%) of respondents said they didn't know if any actions were in place.

This is worrying. Evidence from a wide range of global sources suggests that addressing the gender imbalance will derive significant benefits for global economies. A recent study by McKinsey & Company suggests that narrowing the gender gap could add as much as \$12 trillion to the global gross domestic product (GDP) by 2025, equivalent to 11% of the world's GDP. A global study by the Peterson Institute for International Economics and EY suggests that an organisation with 30% female leadership can

increase profitability by 15%. The National Center for Women and Information Technology in the US reports that “gender diversity on technical work teams was associated with superior adherence to project schedules, lower project costs, higher employee performance ratings, and higher employee pay bonuses.” With substantial evidence suggesting the positive impact that a more diverse project team has on project costs, timelines and performance, it raises the question: is the gender imbalance causing UK businesses to miss out on the benefits of digital transformation?

If the existing gender imbalance stems from a lack of candidates coming through the UK school system, it’s important to examine the prospects for girls who could potentially pursue STEM-related careers. The data here is also troubling. In another recently released report, [Why Europe’s girls aren’t studying STEM](#), Microsoft surveyed 11,500 girls and young women (ages 11 to 30) across 12 European countries about their interest in STEM subjects. It found that girls across all regions start off with a high interest in STEM, but that interest plummets steadily through their teens and then picks up again in their 20s.

In the UK, though, that interest falls through their teens but doesn’t fully recover through university and into adulthood. The girls interviewed also said they would like to see more encouragement from women with professions in STEM areas. Perhaps the most important finding from the study is that there is a four-year window – between 11 and 15 – where we can get girls engaged and excited about careers in STEM, and foster a lifelong love of these subjects. More must be done to demonstrate to this group in particular that a career in technology and cloud services can be a creative, fulfilling and rewarding career to pursue.



Conclusion

The research underpinning this report demonstrates the scarcity of cloud resources within the UK and the impact this is having on many organisations. Whilst the majority of respondents have identified that Cloud skills are fundamental to their digital transformation journeys, many have struggled to identify employees or partner organisations that can immediately offer the skills required. The implications of this cannot be overstated. The fourth industrial revolution is enabling rapid and fundamental reshaping of so many industries but we cannot allow thousands of businesses to be forced to sit on the sidelines, watching whilst their competitors transform the competitive landscape and render their business models redundant. It is one thing if an organisation fails to realise that a business model will no longer continue to succeed because “we’ve always done things this way”, it is quite a different story if they realise they need to evolve but are unable to access the skills necessary to make that transformation. Yet the research findings in this report suggest that this could be the fate of as many as 3,500 mid-large businesses within the UK. At a time of great uncertainty, this further complicates an already delicately balanced economic picture.

The degree to which respondents believe the challenge of finding appropriately-skilled staff will get easier in the next couple of years is also surprising. A wealth of data from various sources indicates that the gap between the number of people with Cloud skills and the number of roles available has continued to widen in recent years and there is every indication that this is set to continue. Organisations that are postponing transformation programmes in anticipation that there will be a flood of newly-skilled individuals entering the workforce in the next couple of years would do well to think again.

Whilst the data outlines the challenges that many organisations face, it should make for positive reading for those interested in pursuing a Cloud career or for businesses that already offer Cloud consultancy to other organisations. With demand outstripping supply, those equipped with Cloud skills can be confident that their talents will be required for the foreseeable future. Furthermore, those organisations with appropriate accreditations and employees that are able to furnish their CVs with the latest Certifications can also expect to command a premium for their services.

Perhaps understandably, many respondents are seeking to address these challenges by upskilling their own staff, investing in training to bring their employees’ own cloud skills up to the levels required. This is a sensible approach, though if organisations are to realise the value of the investments made in their own staff, it is vital that they continue to offer challenging, inspiring and valued work for these employees. If they fail to do so, these employees will take their newly acquired and much sought after skills to an employer that does.

Perhaps the most worrying conclusion to be taken from the research is not the lack of gender diversity within the Cloud skills market but the lack of appetite to address this issue. All evidence suggests that a more gender-balanced workforce delivers better quality work, generates more value for an organisation and in turn reaps better rewards. However, the research indicates that whilst the average gender split amongst respondents’ organisations is 80:20 in favour of men, just 13% of respondents’ organisations are actively seeking a more balanced mix. Organisations need to do more to address this issue, not just because it’s the right thing to do for an equitable society, but because it’s a key component for becoming a more successful business. But we must also do more as a society to fuel the pipeline of young women leaving college or graduating from university with a passion for technology and a realisation of the fulfilling, inspiring careers that cloud skills can enable. Until we do this, it may prove impossible to close the Cloud Skills Chasm.

How Microsoft is addressing the Cloud Skills Chasm

As we have discussed in this report, the UK’s digital economy is key to growth and competitiveness in every sector. Whilst it is currently flourishing, creating jobs and contributing billions to the economy, the country needs to tackle the serious digital skills shortfalls outlined in this report to ensure continued success and prevent a significant proportion of businesses falling behind.

Microsoft is working with government, educators, charities and industry to help the UK increase its digital capability, and helping people gain higher skilled, higher paid work. The Microsoft Digital Skills Academy seeks to address immediate and near-term skills needs through apprenticeships and skills development programmes, as well as building a stronger future talent pipeline by supporting efforts within the education system. This programme has three core objectives:

- 1. To build the future talent pipeline by increasing the tech skills of young people**
- 2. To improve the flow of people pursuing digital careers**
- 3. To equip UK PLC with vital Cloud skills**

Building the future talent pipeline

Microsoft has a long-term commitment to supporting the UK on its journey to become a global leader in Computing Education and supports a variety of programmes to help address this issue:

1. Encouraging young people to pursue careers in technology

The [Microsoft Get On](#) initiative seeks to inspire young people to consider a career with technology – either with a tech company, or as a tech specialist in any industry. A team of undergraduate placements students and apprentices from across the Microsoft business provide workshops in local schools, attend careers fairs, and host information events at Microsoft offices. Since 2012 they have reached over 40,000 young people.

2. Investing in diversity among those studying Computing Science

Microsoft runs two programmes designed specifically to inspire young women and encourage them to pursue a career in technology.

DigiGirlz: Over its eight-year history, Microsoft UK’s DigiGirlz programme has given over 2,000 schoolgirls aged 12-13 valuable insights into the life-changing opportunities that a career in the tech industry can offer. DigiGirlz is a global programme which runs annually as a one-day event each November at Microsoft’s UK Headquarters. The day is designed to equip the girls with a better understanding of careers within this sector through thought-provoking exercises and innovative product displays. DigiGirlz attendees have the opportunity to connect with Microsoft employees and gain personal insights from them whilst participating in hands-on computer and technology workshops.

Modern Muse: Microsoft is also a partner of Modern Muse, a website designed to inform young women about the working world, help explore subject choices and give them an idea of where those choices may lead. It offers career inspiration, connections, and advice from Muses and the companies they work for. Muses are successful women, from a variety of backgrounds and Modern Muse offers an insider's view of their day-to-day work lives.

To find out how to partner with Microsoft on DigiGirlz events, please visit:
<https://www.microsoft.com/en-us/diversity/programs/digigirlz>

To find out more about Modern Muse, please visit: <https://www.modernmuse.org/#/>

3. Supporting the teaching of computer science

Microsoft is a significant supporter of the grass-roots community Computing At School (CAS). With 25,000 members – primarily teachers – CAS provides leadership, guidance and support around Computing to any teacher or school needing it.

In 2016, Microsoft provided grant funding to support the development of resources for secondary school leaders. Produced by BCS and Computing At School (CAS), the toolkit for school leaders includes practical advice, guidance, case studies and action plans to assist teachers and their senior leadership teams.

In addition, the Microsoft Educator Community is a personalised hub for teachers to connect, collaborate, find training and lessons, and earn badges and certificates. The training materials offered online in the community are also used face to face by expert trainers and training partners and we currently train over 10,000 teachers a month.

Microsoft's Developer Experience (DX) team has also been engaging with both Faculty and Students at some of the UK's top universities, specifically around classroom teaching, extra-curricular hacks and events that focus on access to, and practical use of, Cloud services. This work has spanned from web/application development through to machine learning and industrial projects.

Improving the flow of people pursuing digital careers

Apprenticeships

In order to improve the flow of people pursuing digital skills, Microsoft is increasing commitments to UK apprenticeships by driving 30,000 new apprenticeships by 2020. The [Microsoft Partner Apprenticeship Program](#) has developed schemes which now account for one third of all IT apprenticeships in Britain. Since its launch in 2010, more than 14,000 apprentices have started a tech career through this initiative, across more than 8,000 employers. Microsoft's investment in professional apprenticeship programme design and oversight has enabled SMEs to engage in providing the types of quality apprenticeships which they might struggle to build on their own.

In March 2017, Microsoft launched its Azure Apprentice programme, offering training in a range of Cloud features, including the different ways it can be provided, how it can be used for developers and web architects, as well as becoming an engineer. The Azure Apprentice programme is an extension of the current apprentice programme and aims to enrol 1,000 apprentices within the first year.

Microsoft has also teamed up with the National Apprenticeship Service as an Intermediary Partner, helping to promote the benefits of apprenticeships.

To find out more about how to become a Microsoft apprentice or how you can hire one as an employer, please visit: <https://partner.microsoft.com/en-gb/Training/apprenticeships>

Guidance from the UK government on how you can take on an apprentice is also available here: <https://www.gov.uk/take-on-an-apprentice>

Traineeships

Microsoft also works with training provider QA to offer traineeships to young people from disadvantaged backgrounds, giving them a chance to pursue a fulfilling career and tackle the UK's digital skills crisis. The programme provides trainees with a chance to learn and grow, time and support to explore their employment interests, and opportunities to demonstrate their potential.

Equipping UK PLC with vital Cloud skills

In order to address the Cloud skills chasm in the UK, Microsoft has outlined its commitment to equip UK PLC with vital skills. It will do so by:

1. Training 500,000 digital specialists by 2020
2. Training 30,000 public servants by 2020
3. Ensuring free, basic digital skills are available to everyone

This multi-year strategy will provide training in both everyday digital literacy as well as targeted efforts to equip the UK's public and private sectors with vital cloud technology skills.

Microsoft aims to train 30,000 UK public servants – for free – in a range of digital skills. This will enable the UK government and public sector organisations to deliver better, more efficient, more modern and transformative services to all people in the UK.

For individuals, Microsoft is offering free Azure training through a modern learning model called a Massively Open Online Course, or MOOC. MOOCs are so much more than online videos and demos – they incorporate videos, labs, graded assessments, office hours, and more. The MOOC catalogue is continually being added too and ranges from introductory courses through to specialist topics such as DevOps testing.

Completing a MOOC is one way to learn vital cloud skills, but other options are available. Microsoft Certified Professional (MCP) exams remain a respected and recognised designation of cloud capability. Those wanting to accredit their skills in a single area can purchase a single exam, retake, and practice test for \$99. Those looking to demonstrate a broader Cloud mastery can purchase three exams, retakes, and practice tests for \$279, a major discount from market value. Microsoft also partners with the Linux Foundation to offer an optional add-on discount toward Linux certification. For more information, please visit: <https://www.microsoft.com/en-us/learning/azure-skills-training.asp>

For start-ups and entrepreneurs, Microsoft offers support via its BizSpark programme. A one year programme, BizSpark makes all Microsoft development and test software available for free, including Azure, Windows, Visual Studio, Office and SQL Server. Members of the programme can also take advantage of hundreds of free training classes, technical content, and break-fix phone support to help them on their journey. Organisations qualify if they are less than 5 years old, privately held, and earn less than \$1 million annually. For more information, please visit: <https://bizspark.microsoft.com/>

Cloud skills survey methodology

An online survey was fielded to qualifying respondents by YouGov on behalf of Microsoft. Fieldwork took place during December 2016 with 250 completed survey responses achieved. All respondents were employed in a full-time IT role in an organisation with at least 250 UK employees. Respondents had to be responsible for, or actively involved with, IT skills recruitment for their organisation or the technical evaluation of external providers (consultants, systems integrators, solution/service providers etc). Microsoft was not revealed as the survey sponsor.

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