UNLOCKING THE UK'S DIGITAL POTENTIAL: HOW UPSKILLING AND RESKILLING CAN DRIVE PRODUCTIVITY

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The Institution of Engineering and Technology (IET) is working to engineer a better world. It works to inspire, inform and influence the global engineering community, supporting technology innovation to meet the needs of society. As one of the world's largest engineering institutions, it has 154,000 engineering and technology professions in 148 countries. With access to expertise spanning all engineering and technology sectors, such as digital, innovation, energy, built environment, manufacturing, transport, healthcare and engineering safety, it provides expert advice to Governments and other agencies; produces fact files and briefings to the public; and is regularly in the mainstream and specialist media explaining the impacts of engineering and technology on society.

The IET's *Skills for a Digital Future survey* shows that a digital skills gap may be holding back the UK economy. The solution? We need a paradigm shift towards lifelong upskilling and reskilling, underpinned by flexible government support.

By some measures, the UK is leading the world in the innovation of emerging digital technologies. Our universities rank among the world's best for artificial intelligence (AI) research [1]. We have more tech unicorns – start-ups with a $1billion+ valuation – than France and Germany combined [2]. The UK should be well-placed to capitalise on the fourth industrial revolution, with innovations in AI, robotics, and extended reality poised to spur innovation and productivity.

What we are lacking however, is the critical mediator of digital technology and economic growth: digital skills. The government knows this – official estimates put the economic cost of the UK's digital skills gap at £63bn per annum [3]. This is almost half of the National Health Service's annual budget, and represents an opportunity cost that is likely to spiral as the pace of technological change accelerates further.

The IET, which is uniquely placed to understand digital skills with access to insight and expertise across a range of sectors, recently published its *Skills for a Digital Future survey* – it asked over 1,200 engineering employers about their digital skills needs. The headline results are alarming – 47% of employers report a skills gap in their technical workforce. When this result is broken down by category, 'advanced or specialist' digital skills are the most in need. Why?

terms. *The Skills for a Digital Future survey* shows just that – when asked to describe 'digital skills', engineering employers offer a wide range of definitions. Whereas employers in the IT / communications sector are far more likely to talk about specific software engineering skills, those in other sectors – such as construction and manufacturing – often refer to basic IT knowledge.

58% of large companies are more than twice as likely as SMEs (27%) to give their employees digital skills training

There are two major themes which emerge from the data: firstly, an adoption / awareness gap among some engineering *employers* about the benefits that emerging digital technologies can bring. Secondly, a resources gap for digital upskilling and reskilling of employees to take advantage of these opportunities where they are identified.

WHAT ARE DIGITAL SKILLS?

Most conversations about digital skills start the same way – what are they? The response to this question often reflects the line of work of the respondent, which makes it a difficult question to answer in general

It's concerning that so few answers refer to the technologies of the fourth industrial revolution, such as AI, robotics, or extended reality. The hard data shows a clear adoption gap between sectors – while 49% of IT / communications employers report that most of their staff 'regularly' use AI, this drops to 15% among manufacturers. **We must improve awareness of the benefits that harnessing emerging digital technologies can bring.**

A DIGITAL SKILLS GAP MAY BE HOLDING BACK THE UK ECONOMY

49% of employers with a digital skills gap say that it reduces productivity. Without awareness of the benefits of emerging digital technologies, employers will not invest in the digital skills needed to drive productivity. In construction for example, an industry which generally takes a risk-averse approach to adopting new technologies, productivity has been virtually stagnant since the 1960s.[4]

AI-powered technologies such as digital twins could help reverse this trend. In short, a digital twin is a virtual representation of a physical system (such as a building), which acts as a one-stop repository for lifetime data about that system. Machine learning can then use this data to continuously optimise the system's productivity. Digital twins harbour both economic and environmental benefits for the construction sector, but will require skills to implement and operate. So, while it is encouraging that 34% of construction employers see AI as being important to growth by 2027, it is concerning that half of these report that they don't have the relevant skills to take advantage.

Employers also report that a digital skills gap is harming their ability to innovate (35%), grow (35%), and deliver contracts (29%). Consequently, firms are more likely to outsource business to contractors or overseas services companies, which impacts costs and staff in the UK.

Finally, the digital skills gap impacts not just the economy, but also the environment. Previously, the IET's *Skills for Net Zero and a Green Recovery survey* showed Net Zero and energy-related businesses are facing a digital skills gap – it is clear that no sector is fully prepared for the fourth industrial revolution.

92% of those with a digital skills strategy need additional skills to deliver the strategy – across innovation, agile-thinking, and management skills

UPSKILLING AND RESKILLING IN THE DIGITAL FUTURE

While specific areas – like AI, robotics, and extended reality – are destined to remain important, the concept of 'Skills for a Digital Future' transcends any single technology. The digital present is already a fast-moving space, the digital future will move even faster. ChatGPT epitomises this – just as policymakers were getting to grips with ChatGPT-3, a fourth version is released marking a step-change in the technology's capability.

There has never been a more compelling case for lifelong learning. Continual digital upskilling and reskilling will be necessary for both employees and employers to thrive. We need a paradigm shift in this direction, not just for future generations, but for the 80%+ of the 2030 workforce which is already in work.

Even where there is adoption / awareness of digital technologies, there is often a lack of resources to manage and fund digital upskilling and reskilling. SMEs are most likely to be affected by a lack of resources, being only half as likely to offer digital skills training to their employees compared with large employers (27% vs. 52%)

An agile workforce needs agile support. Government policy should reflect this by giving employers flexible support to help upskill and reskill their workforce as and when new technology requires. The recently introduced Lifelong Learning Bill – which introduces modular funding for higher education courses – is a step in the right direction, but it is not practical for many workers to take out student loans for continual upskilling.

We should embed flexibility into other funding mechanisms, such as the apprenticeship levy. Apprenticeships are a vital part of addressing the digital skills gap, primarily by training-up the technicians who help implement and maintain new technologies. However, the levy in its current form does not work – it has raised over £2bn for training which has gone unspent,[5] and only 4% of paying employers use their full levy entitlements.[6] Allowing employers to re-invest these funds in digital 'microcredentials' is the type of agile support that we need.

Among those that expect AI to be important for them, 50% say they don't have the necessary skills

CONCLUSION: 3 RECOMMENDATIONS FOR GOVERNMENT

Government policy should target increasing adoption / awareness in sectors where uptake of these technologies is low, and making flexible financial support available for digital upskilling and reskilling:

1. Funding for upskilling and reskilling, for example using the unspent apprenticeship levy. Funding should be more flexible for employers to use where they need it most.

2. Sustained support for skills in emerging digital technologies. Training should not be seen as short term but as an investment in the future.

3. Targeted support for SMEs, who may find it more challenging to provide training to their employees.

Digital upskilling is not a 'nice to have', it is something that must, and needs, to happen. The UK risks missing out on a great economic opportunity here – boosting our digital skills capability can unlock our huge technological potential.

References

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