

Call for Evidence: Scaling up - AI and creative tech

About the Institution of Engineering and Technology (IET)

The IET is a trusted adviser of independent, impartial, evidence-based engineering and technology expertise. We are a registered charity and one of the world's leading professional societies for the engineering and technology community with over 155,000 members worldwide in 148 countries. Our strength is in working collaboratively with government, industry and academia to engineer solutions for our greatest societal challenges. We believe that professional guidance, especially in highly technological areas, is critical to good policy making. For further details on the evidence submitted, please contact policy@theiet.org.

Introduction

Scaling up AI and creative digital technology is crucial to ensuring the UK remains competitive in global markets. It is imperative that we capitalise on the opportunities presented to us by AI and creative technologies. Utilising these opportunities will ensure the UK remains an international competitor and make the UK an attractive place to work ahead of overseas competitors.

AI is influencing how businesses, industries and technologies operate now and in the future. However, there is concern over the lack of understanding, training and clear information surrounding AI. An IET survey of engineering employers on the use of AI highlighted that 29% of those surveyed had concerns on the lack of clear information on the utility of AI and the lack of skills. As a result, there is a lack of confidence to use the technology, with over a quarter of people saying they would like to be better informed on how it works and how to use it. (Source: Artificial Intelligence behind 3 times more daily tasks than we think, IET)

As AI spans every sector, concerns around the use and capability of AI needs to be addressed, in order to reap the benefits that the technology can provide. Assessing the opportunities and barriers of AI for Small and Medium Enterprises (SMEs) is integral to ensure that smaller organisations can benefit from the potential of AI and encourage wider adoption. It is also imperative that there is appropriate and clear regulation to maximise the potential of AI, which is transparent and straightforward for businesses to use.

It is important that managers and C-Suite executives gain a good understanding of the opportunities and limitations of AI and other technologies that may be of benefit to their business. They do not need to possess AI expertise themselves, but rather be able to confidently draw upon guidance from subject experts in the formulation, delivery and oversight of strategy and become intelligent customers for the technology.

Recommendations:

- **Support for skill development in SMEs** is included in the national approach to scaling up AI and creative digital technologies. The IET's digital skills survey (Source: IET skills for a digital future 2023 survey, IET). that SMEs are less likely to have a strategy in place to embed digital skills into their workforce, and those with a digital skills strategy, think they will need additional skills to deliver it. Having a platform for collaboration and knowledge sharing could help both SME's and larger organisations develop their skillsets to better suit the implementation of AI and creative tech.
- **The Skills and Growth Levy** offers an opportunity to provide financial incentives or support mechanisms for SMEs to gain AI skills. Being able to use funds from this levy will enable employers to invest in upskilling and reskilling their workforce for these new technologies.
- **Collaboration between academia and industry** is crucial to bringing together government, business, and academia from the outset so that feasibility of potential solutions and the limitations of new approaches are factored in.

- **International collaboration can drive success.** Learning from other countries that are making advances in relevant science and technology sectors can help refine the UK's approach to further adopting AI.
- **An active, open dialogue with the public** about their concerns with AI and how it is being developed is pivotal to increase public trust in the technology. Public trust in the safety of AI is paramount, and clear regulations need to be put in place that ensure it is used responsibly.

Questions

1. What is the economic potential for improving the UK's scale-up landscape, and what are the consequences of failing to capitalise on this?

AI holds the potential to drive innovation and enhance productivity across diverse sectors such as construction, energy, healthcare, and manufacturing – whether this be in 'text-to-design', automation or better data analysis. There exists a wide range of datasets that can support the development of these tools as well as the money to invest into the adoption and development of AI.

There is an estimated £630 billion increase to the UK economy by AI by 2035, increasing the annual growth rate of Gross Value Added (GVA) from 2.5 to 3.9%. However, the UK could forgo £141 billion of growth in the next decade if steps are not taken to address the digital skills gap (Source: Engineering priorities for our future economy and society, IET/NEPC).

2. What specific barriers do SMEs face when seeking to scale in AI, and in creative technology?

- a. To what extent are these challenges unique to their respective sectors?

An IET survey taken on the use of AI highlighted that 29% of those surveyed had concerns on the lack of information around AI and lack of skills and confidence to use the technology, with over a quarter of people saying they wished there was more information about how it works and how to use it. (Source: Artificial Intelligence behind 3 times more daily tasks than we think, IET)

The IET digital skills survey also found that 31% of employers say that AI / machine learning will be important to sector growth. However, 50% of these employers say they don't have the necessary skills in this area, furthermore, 32% of these reported an AI skills gap, saying the shortage is at technician level. This is not unique, there are skills shortages across engineering sectors, for example 47% of employers specify a specialist digital or IT skills gap. (Source: IET skills for a digital future 2023 survey, IET).

- b. What role does access to finance play?

Financial incentives or support mechanisms for SMEs will allow employers to invest in upskilling and reskilling. The Skills and Growth Levy provides an opportunity to do this as the recent announcement stated that it will fund shorter apprenticeships. The changes must ensure that learners and employers are given greater flexibility over their training than under the existing system.

3. How effectively are existing organisations (such as UKRI), catalyst programmes, industry schemes and other Government initiatives addressing these issues?

- a. What outcomes are being achieved?
- b. Are any changes necessary, and how would they work in practice?

Existing organisations including UKRI and catalyst programmes focus on creating the high-end level 7 and beyond capability in the UK, which remains important. However, it is important that the catalyst programmes give output around example use-cases and signpost to other tools and courses.

4. What further measures (financial and non-financial) are needed to address barriers to scale in AI, and creative technology?

There should also be an active, open dialogue with the public about the UK's approach to AI and how AI models are developed and used. Public trust in the safety of AI is paramount, and it should be made clear that regulations are in place to ensure it is used responsibly. The government should also emphasise to the public the economic and social benefits that AI can bring.

Having transparency and clarity around AI model development and use will also help organisations develop their AI capabilities, particularly by sharing good practice and identifying lessons learned, in addition to having open data sets available to for training. This could be particularly beneficial for managers, as two-thirds of engineering employers with a skills strategy in place, think improved management skills will be essential to delivering their strategy. Whilst six in ten felt that better innovation skills will be needed. (Source: IET skills for a digital future 2023 survey, IET)

An increased understanding of AI and its regulations would benefit organisations as a significant (and increasing) proportion say their engineers should currently understand / be able to work with AI currently and in five years' time, extended reality, quantum engineering / computing, and machine learning (Source: IET skills for a digital future 2023 survey, IET). This show that employers recognise these will become important skills in the future.

In conclusion, we recommend:

- Providing financial incentives or support mechanisms for businesses and researchers to invest in AI innovation, particularly for small and medium-sized enterprises.
- Establishing an ethical oversight board or committee with diverse representation from stakeholders, including experts in AI ethics, to ensure that the framework adheres to ethical standards and principles.
- Developing a platform for sharing best practices, research findings, and case studies among businesses, researchers, and regulators to encourage knowledge exchange and learning.
- Have an open dialogue with the public that outlines the UK's approach to AI. This will help address any concerns surrounding its uptake, aid transparency, strengthen public trust of AI.

5. What role do academic institutions play here, and what can be done to boost commercial links with AI and creative technology?

There needs to be constant revision and modernisation of STEM courses, engineering in particular, as technology develops to ensure the understanding and use of AI. Further the associated challenges and difficulties need to be taught within core content for degrees with that continued focus in MSc and doctoral training

centres in AI. There also needs to be translational collaboration from doctoral training centres in AI to other doctor training centres in wider engineering and STEM subjects.

A consortium of academia, business, and policy makers should identify the key challenges the UK is facing in order to address them collectively. To enable this, there needs to be a better framework for collaboration with clear, rapid, agile mechanisms for dealing with complex issues such as intellectual property.

Early conversations between stakeholder need to consider the feasibility (technically and financially) of an application. Policy can be then set that will then enable strategic objectives to be met that take account of both social and business need. This approach will also incentivise joint investment from industry.

6. What can the UK learn from overseas?

In the IET's International Green Skills Survey, 50% of countries surveyed (Germany, India, China, Australia and the USA) have increased their use of AI to enhance their sustainability strategy. (Source: International Green Skills Survey 2023, IET.) The UK can learn from other countries that are making advancements in the science and technology sectors and utilise international collaboration to drive success.

Lessons can be learned from the emerging AI strategies of other countries which share high ambitions for the technology. For example, the approach by the United States federal government, who held many public consultations in developing a framework for trustworthy AI, proved that bringing together a wide range of stakeholders to develop AI governance – from government, industry, professional bodies, academia, and the civil society, is essential to develop a well-accepted approach to regulation. (Source: Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence, The White House)

Furthermore, it is essential to train and build a broad understanding of AI in government officials, legislators, and policymakers who will be responsible for AI governance. This is exemplified by the approach of the United Arab Emirates (UAE). The UAE is a regional leader in AI, which is projected to account for 13.6% of its GDP by 2030. This underscores the need to facilitate more legislation and better guidance. (Source: UAE National Strategy for Artificial Intelligence 2031, Gov.AE)