

BRIEFING NOTE: AI and Employment Opportunities: Fostering Skill Development for a Prosperous Future

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SUMMARY

- Ensuring the employment opportunities of current and future generations as Artificial Intelligence (AI) technology develops is key to the UK economy.
- Identifying the tasks that will be substituted, augmented, or created by AI can help in fostering the development of skills that would ensure employment for current and future generations.
- Maths, programming, and social skills are likely to be the skills of the future as AI develops.
- AI could be an engine of equalizing opportunities if government can provide disadvantaged children with the skills of the future.

RECOMMENDATIONS

- Invest in education and training programmes that promote digital literacy, programming, and mathematics skills to prepare the workforce for AI-related jobs.
- Support initiatives that encourage the development of social skills to enhance employability in roles requiring both technical and interpersonal abilities.
- Increase efforts to assist disadvantaged children in acquiring the skills of the future to reduce inequality and promote intergenerational mobility.

THE ISSUE

Last month, the United Kingdom hosted the inaugural global summit on Artificial Intelligence (AI), known as the 2023 AI Safety Summit. This event featured a noteworthy exchange between Prime Minister Rishi Sunak and Elon Musk, where Musk stated that 'AI will mean people no longer need to work', suggesting that AI could eventually take over all jobs and replace all workers. While the realism of this statement can be debated, it prompts a critical question: when is such a scenario likely to be achieved?

What is AI?

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and learn like humans. The term can also apply to any machine that exhibits traits associated with a human mind, such as learning and problem-solving.

Elon Musk's statement aligns with a historical trend of visionaries making similar predictions about the future. In 1930, John Maynard Keynes foresaw that the economic problem, which he described as material scarcity leading humans to work, "may be solved, or at least within sight of a solution, within a hundred years" (Keynes 1930). A century later, we remain distant from this vision. These overly long-run speculations about the development of AI often divert attention from the more immediate concerns, such as the employment security for present and future generations. As Keynes himself said, "in the long run we are all dead", hence raising the question: how do we ensure employment opportunities in the meantime?

To address the pressing issue of employment in an era of evolving AI technology, it is imper-

ative to understand how technology is reshaping the nature of work, the implications of these changes for contemporary generations, and the skills necessary to secure employment for future generations.

ARTIFICIAL INTELLIGENCE AND THE NATURE OF WORK

The impact of technology on work revolves around the transformation of tasks executed by the workforce. Existing tasks fall into two categories given the impact technology might have on them: technology can displace workers in some tasks while enhancing their capabilities in others (Goldin and Katz 1998). Furthermore, technology can introduce entirely new tasks and jobs (Autor et al. 2022), which constitutes an additional category.

For instance, the Information and Communication Technology (ICT) Revolution has resulted in a profound transformation of tasks. Routine tasks such as data entry, calculations, and report generation, have been automated, while workers have become more productive in abstract tasks such as data analysis. Meanwhile, new tasks were created such as digital content creation with the development of websites and online platforms.

To evaluate the impact of AI, we must discern which tasks fall into which category (i.e., displaced, enhanced, or new tasks). This is a challenging exercise, especially when considering new tasks, due to the difficulty of envisioning future work. While there is no reason to believe AI would break these established patterns, the concerns surrounding AI arise for two reasons. First, AI has the potential to replace a more extensive array of tasks than previous technologies. Second, AI is likely to be the first technology to challenge previously safe-from-

automation tasks, particularly abstract and interactive tasks, in contrast to routine tasks already impacted by the ICT Revolution.

THE SOCIAL CONSEQUENCES OF TECHNOLOGICAL CHANGE

The transformation of work's nature due to technological advancements can have profound implications for contemporary generations. Notably, the technological developments in the latter half of the 20th century, which include ICT, led to the replacement of numerous routine tasks, typically handled by workers situated in the middle of the wage distribution. This shift resulted in the polarisation of employment, with employment increasing in low- and high-paying jobs at the expense of middling jobs. This trend has been observed in several high-income countries, including the UK since 1975 (Goos and Manning 2007). It has contributed to an overall decline of the intergenerational mobility in the UK, as entering the labour market in these middling jobs used to be a stepping-stone toward high-paying jobs for individuals from lower Socio-Economic Status (SES) backgrounds (García-Peñalosa et al. 2023).

Nonetheless, there is good news. A recent German study reveals that computerization has reduced wage inequality between individuals from different SES backgrounds within qualification groups (Arntz et al. 2022). This means that children from lower SES backgrounds, if they acquire skills that are complementary to technology and enter high-paying occupations, are likely to experience a smaller wage gap compared to their peers in other occupations. Although these conditions are quite specific, particularly as network account for a sizeable proportion of the SES gap in access to high-status

occupations (Macmillan et al. 2015), they hint at the potential for technology to be an engine of equalizing opportunities, provided that children from lower SES backgrounds are equipped with the necessary skills. Yet, two questions arise: What are these essential skills, and how can we facilitate their acquisition, especially for disadvantaged children?

SKILLS OF THE FUTURE

Each new generation adapts to technological change by acquiring skills that complement emerging technologies. Workers can perform tasks by using specific skills and knowledge. As technology replaces some tasks, the value of some associated skills may diminish, while others may increase because they better support remaining tasks or new tasks. We anticipate that AI will have similar effects. Therefore, it is crucial to identify the skills necessary for the future.

As AI technology is still in development, determining the skills that will complement it poses a challenge. This exercise is more straightforward for well-established technologies, such as ICT, for which programming and mathematics skills are highly relevant. We can extrapolate that skills already pertinent to ICT will likely retain their importance, given that AI builds upon ICT. Profound comprehension of AI's core technologies, including machine learning, deep learning, neural networks, and cloud computing, as well as the fundamental knowledge to understand them, such as programming and mathematics, are expected to be invaluable assets for future generations. Encouraging early development of these skills is likely to ensure a promising future for the next generation (Outhwaite and van Herwegen 2022). Additionally, recent studies highlight the importance of social skills such as coordination, negotiation, persuasion, and social perceptiveness, for both employment

and wages, particularly in roles demanding both strong mathematical and social abilities (Deming 2017).

Fostering the development of these skills across all SES backgrounds presents a significant challenge, as their acquisition is highly unequal (Blanden et al. 2022). Children from higher SES backgrounds typically achieve higher educational attainment and have a greater propensity to acquire these skills compared to their peers from lower SES backgrounds. This disparity is attributed to several factors, including differences in parental investment in education due to financial and time constraints or preferences, as well as spatial disparities in school quality. Addressing the root causes of these disparities through education and social policies could facilitate the development of these skills, thereby ensuring equal employment opportunities for children from all SES backgrounds in a labour market increasingly influenced by emerging technologies like AI.

SUMMARY AND IMPLICATIONS

The 2023 AI Safety Summit brought attention to the profound changes AI can bring to our work lives. While we have heard predictions of a work-free future before, it is crucial to focus on what is happening now. AI is reshaping jobs, affecting which skills are required and who gets hired, and can create inequality. To thrive in this changing landscape, current and future generations need to learn skills that are key to the future, such as maths, programming, and social skills. UK Government must make sure people are ready for the future of work, so we can have a prosperous and fair society as AI technology advances.

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