Artificial Intelligence and the Future of Work

There is a widely acknowledged digital skills gap in the UK, with the potential for profound impact on the future growth of the UK economy. Enabling and up-skilling the UK workforce to take full advantage of the digital and artificial intellegence (AI) technology revolution will be vital in both a post-Brexit and post-COVID world, however there remains little consensus on the impact of AI on the nature of work in the UK, as well as its place in the wider political, economic and social discourse.

Likewise questions remain as to how Government will be able to support the investment in lifelong skills and training that will be required to harness this opportunity to its full for the entire UK.

The UK's Industrial Strategy names AI & Data as one of its four Grand Challenges[1]. The challenge of AI includes the questions:

- What opportunities does AI offer for the future of work?
- What problems does it raise?
- How can the prosperity created by AI and automation be used to benefit society?

There are many possible "futures"[2] of AI and work, and policy will play a key role in shaping the future work landscape of the UK. There is a need for researchers, policy makers and industry to pro-actively guide AI policy to meet this challenge.

This briefing paper provides a review of current evidence from academic and policy literature around AI and its potential impact on the future of work in the UK.

KEY QUESTIONS

- How do individuals view the challenges and opportunities of advancing AI technology for decision making about careers and skills development?
- How might advancing AI impact the quality, equity and suitability of work?
- What are the roles and responsibilities of Government, employers and educators in improving outcomes for individuals and society to meet the evolving work landscape?
- What are the knowledge and policy gaps that might meaningfully be addressed through collaborative multi-actor activity?

Future skills

How do individuals view the challenges and opportunities of advancing AI technology for decision making about careers and skills development?

While many people are aware of some everyday technologies that use AI, such as personal assistants on smart phones and targeted online advertisements, very few people are familiar with key AI terms such as "machine learning" or have a good understanding of how AI technologies work[3]. Sensationalist depictions of AI in the media, along with a lack of clarity from AI developers about what their technologies can and cannot do, has fed some of this confusion[4].

- A campaign of public engagement would improve general AI literacy, educate the public about the potential risks posed by AI technologies and encourage up-skilling by promoting the opportunities of AI.
- A long history of research in public engagement with science and technology highlights the fact that successful public engagement cannot be a top-down exercise. As well as educational activities, any AI engagement initiative must therefore involve a dialogue between policy makers, the public, and the AI industry, with opportunities for the public to share concerns about potential risks of AI technologies.
- The AI industry also has a key role to play in improving clarity about the capabilities and limitations of their products.

Decision making about careers and skills development is also strongly influenced by social factors such as gender, ethnicity, socioeconomic background and age.

- Increasing access to AI education and training will not automatically lead to take up of these opportunities. For example, despite several decades of initiatives to encourage more girls to study computer science, only 18% of those currently studying it at university are female[5].

The reasons behind technology skilling decisions are complex. Initiatives to reduce the AI digital skills gap will need to be informed by wider social research into technology engagement and the issues faced by members of under-represented social groups.

Quality and equity

How might advancing AI impact the quality, equity and suitability of work?

Advances in automation capabilities as a result of AI risk the loss of jobs in certain employment sectors and the potential eradication of some occupations altogether. A general consensus has emerged on what jobs are most at risk in the next 10-20 years:

- Low-income and low-skill jobs involving highly structured tasks face the most immediate risk of automation, particularly in transportation, administration and data processing, manufacturing, construction, and the fast food and service industries, as well as middle-income jobs in accounting and paralegal work[6,7].
- Geographic areas with high employment in these sectors would be the most affected, with significant variation of vulnerability to automation across different areas of the UK[8].
- This problem may be compounded by the potential knock-on effects of disruption to the labour market caused by

Covid-19, as workers from affected industries such as leisure and tourism compete for low-skilled jobs in other sectors. Additionally, the process of automation is likely to be hastened with the aim of reducing social contact in workplaces.

This raises considerable equity issues as these projections indicate that the benefits of AI and automation will not be spread equally across different segments of society, and its negative impacts are likely to be felt disproportionately by people who are already in relatively low-income occupations. Some possible policy interventions to reduce inequity are raised later.

What is less well understood is how the quality of future work may be affected. Since developments in AI will create new jobs that don't yet exist and radically alter existing jobs in unforeseen ways, to some extent it is impossible to predict the landscape of the future labour market. Discussions of some of the possible impacts range from optimistic to critical:

- Potential benefits of AI on work could involve freeing up humans to focus more on jobs involving a variety of skills and jobs that utilise creativity and emotional intelligence while relegating routine tasks to machines

- AI may also make existing jobs more effective by boosting human cognitive power with AI technologies.

- In contrast, potential negatives could involve less freedom at work due to the increased monitoring of workers via sensor devices, the recruitment of mass amounts of low-skilled tech workers to do the routine work of "training" AI machines, and an increasing proportion of the workforce taking on "gig economy" and temporary contract jobs with reduced job security and employment rights[9].

Roles and responsibilities

What are the roles and responsibilities of Government, employers and educators in improving outcomes for individuals and society to meet the evolving work landscape?

The question of roles and responsibilities is the least understood area in the current literature. While there is a consensus that there is significant risk of increased economic inequality if the benefits of AI are not redistributed throughout society, many diverse and occasionally conflicting strategies have been suggested for achieving this. This section briefly introduces some of these potential avenues to prompt further discussion.

The responsibility to boost productivity and economic growth:

- Increase public funding of AI research and support businesses to roll-out new AI technologies as rapidly as possible, for example by investing in superfast broadband infrastructure.

- Create a diverse national strategy for training and recruiting new AI talent, including:
  - School curriculum reform to cover more AI and data skills, as well as focus on increasingly in-demand creative and interpersonal skills.
  - Supporting adult education and retraining initiatives, both in further and higher education institutions and in the workplace.

- Ensure talent from outside the UK retain the right to work to help reduce the existing AI skills gap.

The responsibility to reduce inequality and ensure quality of life:

- Regulate the roll-out of new AI technologies at a manageable pace to minimise negative impacts on employment and a shift to precarious and low-quality work.

- Consider financial methods of redistributing gains from AI technologies, such as introducing a "robot tax" on companies adopting automation, introducing a universal basic income or minimum income, or nationalising AI services and infrastructure.

- Prioritise research into when and how different industries and geographic areas of the UK are likely to be affected by automation in order to guide policy priorities.

The responsibility to provide legal protection for groups and individuals:

- Update employment legislation to strengthen protection for workers in the changing labour market, such as gig economy workers and contractors.

- Introduce a framework of certification and registration for AI professionals. Ensure that work outsourced to suppliers outside the UK is held to the same ethical and security standards.

The capabilities of AI continue to advance rapidly. While this briefing paper provides a snapshot of research at this point in time, an ongoing assessment of the landscapes of the labour market and the AI industry will be required in order to inform policy.

APPENDIX OF REFERENCES

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