New business horizons in the AI landscape (original article: https://innovateuk.blog.gov.uk/2020/06/03/new-business-horizons-in-the-ai-landscape/)

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In recent years, Artificial Intelligence (AI) has been positioned as one of the biggest commercial opportunities for global economies.

The Department for Business, Energy and Industrial Strategy (BEIS) estimates that AI could add an additional £630 billion to the UK economy by 2035. This estimate pre-dates the Covid-19 outbreak but we don't see AI's role and importance diminishing as a result.

The cross-cutting nature of AI means that the impact will not be limited to a single sector, or solely to the firms that develop AI tools and technologies.

Many sectors of strategic importance to the UK have started to identify and pursue specific opportunities to use AI to boost productivity in their specialised processes or to increase competitiveness through the development of new or improved products, processes and services, better tailored to customer need.

Yet, despite these well-documented opportunities and the UK's vibrant AI start-up ecosystem, we have not seen AI adoption happening at pace or scale. The need to accelerate AI adoption is not new, and the UK has been highlighted as lagging behind US and European firms in this area for a number of years.

AI adoption

Prior to the COVID-19 outbreak, our engagement with businesses across a number of sectors led us to conclude that many businesses, regardless of size, were not reaping the benefits of adopting AI within their internal business processes, such as business development, customer services, HR etc.

Where this represented a significant opportunity before the outbreak, in our view this is now set to be a growing market. In addition to productivity, competitiveness and optimisation, companies are shifting focus to resilience as businesses face supply chain, human resource and customer connectivity problems in ways unimagined a few months ago.

Business leaders are also gaining more insight into the power of having and exploiting digital data.

Despite the future opportunities we see, there are barriers to adoption that remain and research and innovation is critical to enable businesses, large and small, to overcome them.

Data, data everywhere…

Companies are spending significant time and expense on data engineering – getting data into a form that can be used for AI. Up to 80% of the cost of an AI project is spent on obtaining, cleaning and organising data, for example into sets for training and testing algorithms.

The data engineering process also directly impacts businesses' ability to calculate and demonstrate return on investment (ROI) – exploring a company's data is an essential step in quantifying the impact of AI.

Data sets need to be designed with AI in mind and data set curation viewed as a standard business practice.

Improving the productivity of the data engineering process, through collaborative research and innovation, would reduce the costs of AI projects and allow data scientists to dedicate time to issues such as understanding or accounting for embedded biases in data.

Digital Catapult, funded by Innovate UK, seeks to address barriers to AI adoption through its AI programme.

Its recent Machine Learning Platforms report provides a survey of the current ready-made platforms that can support data engineering and other activities, as well as advice on how to choose the right one. However, data engineering or wrangling is still a major cost to firms.

Required skills are evolving and hard to come by

The UK workforce needs a number of key skills to reap the full benefit of AI deployment. Retention of data scientists often attracts the most attention due to the eye-watering salaries commanded based on high demand and short supply.

However, businesses are also facing a shortage of skills that are crucial to operationalise AI successfully.

Innovators will need to work closely with designers and social scientists from the outset to develop ideas that are responsible, intuitive and easy to use, and ensure AI is adopted in a way that meets employer, employee and customer needs and is socially beneficial and environmentally sustainable.

UKRI's investment in Centres for Doctoral Training (CDTs) in AI, AI Masters places at universities and research fellowships will sustain a pipeline of talent and retain top AI talent in UK academic institutions.

In order for industry to capitalise on these investments, we must continue to support business-led AI innovation such as through Knowledge Transfer Partnerships, ensuring innovative businesses can bring in new skills and access the latest academic thinking.

Innovate responsibly

However, working with AI necessarily means also engaging with AI ethics, both to mitigate risks, but also for possible competitive advantage. Trustworthy businesses will be those that can demonstrate that they have taken action to develop responsibly and to communicate clearly.

In turn, this means businesses need to understand how to translate ethical principles into organisational practice, and to be able to do so cost-effectively.

The costs arise from uncertainties and lack of maturity. Both can be mitigated by collaborative efforts to establish best practices and to operationalise these as standards wherever that is possible. Several initiatives exist to support innovators.

Digital Catapult's programme of work in this area is summarised in the Lessons in Practical AI Ethics report. Digital Catapult has also created an applied and practical methodology for AI machine learning ethics, designed for businesses and individuals wanting to adopt an ethical and responsible approach to their machine learning development.

Innovate UK has worked with the British Standards Institute to develop a Publicly Accessible Standard (numbered 440) on Responsible Innovation to provide guidance to help all businesses achieve the benefits of their innovation, not just AI, while innovating responsibly.

A new outlook

The findings of our business engagement had suggested that the UK was arguably more conservative and risk-averse than other AI leading countries, which has hindered our ability to adopt AI.

However, the COVID-19 pandemic has changed the way we live and work, which has had a significant impact on digital transformation across businesses of all sizes.

Only two months ago, we were seeing senior decision makers unclear of the opportunities and limitations of AI, whereas the current climate appears to see leaders looking to leverage the momentum of digital transformation to reduce costs through automation or derive new value from their data in order to stay competitive in the changing economic environment.

The Catapult centres are designed to transform the UK's capability for innovation in specific areas and are able to support businesses across a range of sectors looking to harness AI.

Further support for companies innovating with AI to connect, access markets and showcase their capability is available via the Knowledge Transfer Network and Enterprise Europe Network.

Get involved

Innovate UK and our wider family are supporting programmes and collaborations to address these challenges and are continuing to look for new opportunities to support AI innovation and adoption. Watch this space!

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