

Senedd Cymru

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Ymchwiliad: Deallusrwydd Artiffisial ac Economi Cymru

Cyf: AI08

Ymateb gan: Dr Simon Thorne

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Welsh Parliament

Economy, Trade, and Rural Affairs Committee

Inquiry: AI and the Welsh Economy

Ref: AI08

Evidence from: Dr Simon Thorne



AI and the Welsh Economy

Dr Simon Thorne, Senior Lecturer in Computer Science, Cardiff School of Technologies, Cardiff Metropolitan University

Executive Summary of Recommendations

- The Welsh Government needs to promote AI competency: Develop general AI literacy and skills in "prompt engineering" to help workers effectively interact with AI systems.
- The Welsh Government needs to support validation frameworks: Provide training and resources to help domain experts critically evaluate AI outputs.
- Establish an independent institute: Create a Welsh LLM Benchmark Testing Institute to assess issues of reliability, ethics, and societal impact.

1. To what extent are businesses in Wales making use of AI and planning to do so in the future?

The extent to which businesses in Wales are adopting AI is challenging to assess, given the relative recency of the technology. Based on my experience as an academic and my work on commercial software engineering projects, AI has been leveraged primarily by technology- and data-focused companies that recognise its value and potential.

When considering generative AI, it is unclear how deeply the technology has penetrated large organisations and SMEs in Wales. While there is likely strong enthusiasm to adopt this technology, many organisations face significant barriers, including:

- Skill shortages: A lack of technical expertise to implement and use generative AI effectively.
- Governance gaps: The absence of robust frameworks to ensure safe and reliable use of the technology.

Without addressing these challenges, organisations may struggle to exploit generative AI's potential while ensuring its outputs are both practical and trustworthy. In particular governance frameworks are sorely needed but not readily available, there are some attempts to quantify and explore issues like Trust in generative AI (Thorne, 2024a) but this research is relatively embryonic and needs more work to deliver a governance framework.

2. What are the potential economic opportunities and risks that AI may present for Wales, and how might these vary across different parts of Wales and across different sectors?

Opportunities

Generative AI provides opportunities for Welsh businesses by enabling:

1. Efficiency gains: Automating responses, generating marketing materials, translating content, writing software code, and analysing business documents for hidden insights.
2. Enhanced productivity: Supporting tasks that require significant time or expertise, such as content generation, customer interactions, and analytical reports.

For example, a marketer analysing customer data could use generative AI to process the data faster and more comprehensively. Their role would shift from performing the analysis to validating its plausibility and accuracy (Thorne, 2024a). This shift allows workers to focus on higher-value tasks, such as strategic decision-making or creative problem-solving.

Risks

Despite its potential, generative AI presents several risks:

- Hallucinations: AI may produce outputs that are factually incorrect or nonsensical but appear plausible in context. This issue spans applications from text generation to code writing and data analysis (Thorne, 2024a, Thorne, 2023). Validation by domain experts is crucial to mitigate this risk.
- Bias: Generative AI models can propagate biases present in their training data, including those related to gender, race, culture, and socioeconomic status (Thorne, 2024b)
- Weaponisation: These tools could be misused to spread misinformation, manipulate narratives, or distort historical and cultural facts.

To fully realise the benefits of generative AI, organisations must critically evaluate outputs and adopt structured processes for validation. These tools are most effective when used as an augmentation to human expertise, not as a replacement.

3. How is AI likely to affect jobs and workers in Wales, and what actions might the Welsh and UK governments need to take in response?

AI is unlikely to replace workers outright. Instead, it will augment existing roles, improving productivity and freeing workers to focus on tasks requiring creativity, strategy, or human judgement. For example:

- Marketers, translators, software developers and other human domain experts will remain essential for validating and refining AI outputs.
- AI will automate repetitive tasks, allowing workers to prioritise higher-value activities.

However, using generative AI without expert oversight is risky, as subtle errors in AI outputs can undermine their utility (Thorne, 2024c).

The UK and Welsh governments should consider:

- Promote AI competency: Develop general AI literacy and skills in "prompt engineering" to help workers effectively interact with AI systems.
- Support validation frameworks: Provide training and resources to help domain experts critically evaluate AI outputs.

- Establish an independent institute: Create a Welsh LLM Benchmark Testing Institute to assess issues of reliability, ethics, and societal impact. Together with Prof. Harry Collins from Cardiff University, I propose such an institute, initially under the Knowledge Expertise and Science (KES) research group. This initiative aims to evolve into an independent research organisation as a joint venture between Cardiff University and Cardiff Metropolitan University (Collins & Thorne, 2024), it would benefit from some official support and recognition or at least some funding streams to enable worthwhile research into the issues promoted by the group.

4. What skills are likely to be needed as a result of increased use of AI in the workplace, and how well placed is Wales to deliver these?

To support AI adoption, Wales must focus on developing the following skills:

1. General AI Competencies
 - Skills for effectively using generative AI tools, including "prompt engineering," which involves crafting precise instructions to improve the quality of AI outputs.
2. Technical Expertise
 - Programming and integration skills to incorporate AI into organisational workflows and customise AI solutions.
3. Critical Thinking
 - Training citizens to critically evaluate AI outputs for errors, bias, or misinformation, ensuring informed use of AI-generated content.

Wales has the foundation to deliver these skills through targeted training and education programs, but further investment is essential to ensure responsible and effective AI adoption across sectors.

Recommendation:

Suggest partnerships between government, academia, and industry to create targeted AI training pipelines, especially for SMEs in rural areas.

References

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