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Committee Secretariat
Inquiry into the Digital Transformation of Workplaces
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Canberra ACT 2600

Submission to the Inquiry into the Digital Transformation of Workplaces

This is a timely Inquiry, and I am taking this opportunity to respond in my capacity as an Associate Professor in the Future of Work at Flinders University of South Australia.

With automated decision-making and machine learning technology (ADM/ML) continuing to progress speedily and marketed as a future promotor of economic growth, there is an urgent need to position Australia within the global competition for superior, applied artificial intelligence. Unfortunately, a lack of robust information about the utilisation of advanced technology in the Australian economy currently hampers robust analysis and foresight.

Moreover, many of the matters of interest the Inquiry would like to see addressed, whether they relate to the potential for productivity gains, procedural fairness and labour rights, or the impact on gender (in)equality, will vary as those outcomes depend on a series of assumptions and a range of practices, including in industrial relations. They will vary by

- industry sector[1] as each sector's capability to adopt ADM and/or ML depends on their internal knowledge, especially of management and decision makers, competitive pressures and incentive to adopt (incl. regulatory frameworks), employee relations and empowerment, and, not least, capital base and cost-benefits of automation;
- business-specific objectives: automation to replace (and thus augment) or to displace (and thus cost save)[2]
- the location of the application in the production cycle: will it affect frontline or back-office activities, or knowledge rather than routine jobs and positions[3];
- the extent to which employers and employees consult one another[4].

But even in the absence of robust data, one can explore and surmise, including by drawing on international evidence.

[1] Kim Nguyen and Jonathan Hambur (2023) Adoption of General-purpose Technologies (GPT) in Australia: The Role of Skills. RBA In Bulletin September 2023. https://www.rba.gov.au/publications/bulletin/2023/sep/adoption-of-general-purpose-technologies-gpt-in-australia-the-role-of-skills.html; Andreas Cebulla (2024) The time-less threat of automation: has new technology been the predicted job killer? Labour and Industry. https://doi.org/10.1080/10301763.2024.2363573
[2] Daron Acemoglu & Pascual Restrepo, 2020. "The wrong kind of AI? Artificial intelligence and the future of labour demand," Cambridge Journal of Regions, Economy and Society, Cambridge Political Economy Society, vol. 13(1), pages 25-35.
[3] Michele Battisti, Christian Dustmann, Uta Schönberg, Technological and Organizational Change and the Careers of Workers, Journal of the European Economic Association, Volume 21, Issue 4, August 2023, Pages 1551–1594, https://doi.org/10.1093/jeea/jvad014
[4] Andreas Cebulla and Zygmunt. Szpak (2024) Workplace Relations with AI in Mind: What Is Likely to Change? In: A. Cebulla (ed.) The Future of Work and Technology Global Trends, Challenges and Policies with an Australian Perspective, pp.151-172.

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Benefits for productivity, skills development, career progression and job creation in Australia

These will take time to emerge. Current evidence, albeit often generated in laboratory-like[5] situations or as conceptual explorations[6], suggests that ADM/ML have the capability to increase productivity[7]. This has most clearly been demonstrated with regard to Generative AI.[8] Laboratory-like situations are, of course, remote from everyday workplaces, where a multitude of additional, competing factors shape the extent to which productivity improvements are achievable.[9] They tend to overestimate impacts.

Moreover, at the present stage of development, ADM/ML tools continue to require human oversight, i.e., checks and verification, which claws back some of the productivity gains that may have been achieved. These tools remain error-prone, which risks incurring commercial penalties and human costs if errors are not identified or corrected. Further, should rising production costs impede further capability enhancements of ML models – and their cost effective application, this will likewise limit the immediate prospect of significant productivity gains. Productivity gains may only be achievable if enterprises adopt a whole-of-business approach to innovation, requiring investment that exceeds the resources available to many Australian businesses except the largest.

As to skills development, the trend appears to be towards micro-credentials, which, in theory, enable the quick and timely acquisition of newly emerging and required skills. Given the pace in which ADM/ML evolve, micro-credentials will themselves require frequent updating (if they are even worth undertaking in this volatile development phase) or risk becoming redundant rather quickly. We are seeing examples of learning by micro-credential becoming an accepted, even promoted approach to skill maintenance and enhancement in business, and not only with regard to ADM/ML, but across skill profiles and occupations. To the extent that this approach proves beneficial and efficient, its flexibility may be a future path for training, delivered as distant learning.

Job creation occurs where replacement is greater than displacement.[10] All technological innovation to-date has created some jobs, whilst destroying others. On balance, the job creation outcome has been greater than the job destruction – but this is not a feature of technology *as such* but of the economic principles that inform the application of the technology. To-date, the available evidence suggests that job growth in Australia has not been driven by new technology.[11] To the extent that the same conditions continue to prevail that have so far slowed new technological adoptions, this is unlikely to change. New technology adoption will only create jobs where there is sufficient extant investment, a higher labour share, and wages to stimulate and finance demand.

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[5] e.g., Shakked Noy and Whitney Zhang (2023) Experimental Evidence on the Productivity Effects of Generative Artificial Intelligence. Science, Vol 381, Issue 6654, pp. 187-192, DOI: 10.1126/science.adh2586
[6] Tyna Eloundou, Sam Manning, Pamela Mishkin and Daniel Rock (2023) GPTs are GPTs: An Early Look at the Labor Market Impact Potential of Large Language Models. https://ar5iv.labs.arxiv.org/html/2303.10130
[7] E.g., Sayan Chatterjee, Ching Louis Liu, Gareth Rowland and Tim Hogarth (2023) The Impact of AI Tool on Engineering at ANZ Bank An Empirical Study on GitHub Copilot within Corporate Environment. https://arxiv.org/abs/2402.05636
[8] Erik Brynjolfsson Danielle Li Lindsey Raymond (2023) Generative AI at Work. https://danielle-li.github.io/assets/docs/GenerativeAIatWork.pdf; DellÁcqua et al. (2023) Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4573321
[9] Daron Acemoglu (2024) Don't Believe the AI Hype. https://www.project-syndicate.org/commentary/ai-productivity-boom-forecasts-countered-by-theory-and-data-by-daron-acemoglu-2024-05
[10] David Autor and Anna Salomons (2018) Is automation labor-displacing? Productivity growth, employment, and the labor share. https://www.nber.org/papers/w24871
[11] Dan Andrews, Jonathan Hambur, David Hansell and Angus Wheeler (2022). Reaching for the Stars: Australian Firms and the Global Productivity Frontier. Treasury Working Paper 2022#01. Commonwealth of Australia.

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The role of business software and regulatory technology ('Reg Tech') in improving regulatory compliance in the workplace relations system, including their use by regulators, and accountability for errors resulting in non-compliance

I leave this to those with the relevant ICT/ML expertise to discuss, except for noting that business will likely benefit from any support offered via Reg Tech – and may, in fact, welcome it. For now, however, the challenge is to find a consensus of the most appropriate and, importantly, practicable regulatory principles and their translation in the relevant software. There is no shortage of software intended to, say, test fairness of ML tools.[12] But which one is to set the minimum standard?

The risks, opportunities, and consequences for the nature of work, including effects on hiring, rostering, work intensity, job design, wage setting, monitoring, surveillance and job quality

ADM/ML can be employed to re-design work processes fundamentally or incrementally. Done conscientiously, this can yield significant, shared improvements to quality of work and work-life balance. Thus, ML can be used to improve/streamline workplace logistics (rostering), but we have seen examples of where the hasty, ill-considered design and/or application can disadvantage those whose rosters/logistics are affected – often in an unforeseen manner because the business did not explore the potential implications of the re-design with (all) its employees.

One of ADM/ML's intriguing aspects is their impact on work intensity. Both types of tools are intended to improve the quality but also the quantity of labour output. The latter typically means increasing the output per unit of time – speed, resulting in work intensification. The acceleration of decision-making potential via ADM/ML will not automatically (no pun intended) reduce this risk or free time and resources (and thus reduce extant time pressures) unless consideration is taken of the input and output chains affected by the innovation (a faster turn-around owing to ML may also require a faster delivery of the resources required by the ML tool).

Job design will be – and in international context already is - affected by ADM/ML, especially in context where they (a) challenge existing expert knowledge (thus risking non-acceptance/cognitive dissonance)[13] and/or (b) require or result in new divisions of labour, for instance in previously higher-level activities/responsibilities being cascaded down occupational hierarchies (e.g., from doctor to nurse). The evidence of such re-delegation and resultant enhancement of responsibilities resulting in greater recognition or remuneration appears anecdotal.

The effects of these techniques on the scope of managerial prerogative, labour rights, ability for workers to organise, procedural fairness, equality, discrimination, and dignity at work

Most ADM/ML technologies include a component facilitating surveillance and work control, whether intended (and applied for that purpose) or as a coincidental by-product. The evidence to date suggests that, where businesses are aware of this surveillance potential or indeed apply the technology for that primary purpose, this is mostly if not solely deployed for

[12] Mike H. M. Teodorescu and Christos Makridis (2024) Fairness in machine learning: Regulation or standards? https://www.brookings.edu/articles/fairness-in-machine-learning-regulation-or-standards/

13 Sarah Lebovitz, Hila Lifshitz-Assaf, Natalia Levina (2022) To Engage or Not to Engage with AI for Critical Judgments: How Professionals Deal with Opacity When Using AI for Medical Diagnosis. Organization Science. https://doi.org/10.1287/orsc.2021.1549

the benefit of management, although a beneficial outcome is by no means guaranteed. Surveillance technology has been shown to have unintended side effects, notably worker resistance[14] and gaming of the system, as well as generating incorrect surveillance messages.[15] Especially the latter can have severe adverse effects on workplace equity, including to the detriment of equity groups. Dignity at work is undermined when the technology cannot be overruled and those subjected to surveillance are denied the right to comment/correct/present their side.

Appropriate safeguards or regulatory interventions to guide responsible implementation in the workplace, including the digital skills and resources necessary for employers to appropriately utilise these technologies

The Australian Institute of Company Directors has recommended that, wherever a business seeks to introduce new AI tools, this should be done based on strong stakeholder engagement and with an objective to understand fully the outcomes for the workplace and its employees.[16] I would add that this ought to demonstrate relevant technical and technological expertise, including when the business buys in the technology from third parties. The risk is high that buyers and sellers do not share the same language/ understanding and objectives of ADM/ML in the relevant specific case. There will also need to be service agreements in place that ensure continued system maintenance (and documentation of the nature and basis of bespoke systems), bias control and recalibration, as necessary.

Internally, businesses ought to be equipped to operate and understand the new technology, including its potential weaknesses as well as strengths. This is a matter of employee training/continuous learning, and thus an opportunity to also review the role of the Australian vocational and tertiary education systems.

The effects on gender equality, job security, small businesses, Closing the Gap and disadvantaged and vulnerable cohorts of workers

ADM/ML tools, at present, remain bias-prone, generate feelings of job insecurity, often have limited immediate value to small businesses, and, in Australia's small to medium-sized business economy, their contribution to Closing the Gap and reducing disadvantage and vulnerability is not immediately apparent. The extent to which ADM/ML can have positive, corrective effects on these inequalities is not a question of technology but of social and economic principles.

Yours sincerely

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[14] Cloey Callahan (2023) Trust breakdown: Employees keeping HR teams in the dark about their whereabouts. https://www.worklife.news/culture/remote-work-policies/?utm_campa
[15] Nils Backhaus (2023) Context Sensitive Technologies and Electronic Employee Monitoring: a Meta-Analytic Review. Proceedings of the 2019 IEEE/SICE. International Symposium on System Integration, Paris, France, January 14-16, 2019.
16 Australian Institute of Company Directors/Human Technology Institute, University of Technology Sydney (2024) A Director's Guide to AI Governance. https://www.aicd.com.au/innovative-technology/digital-business/artificial-intelligence/governance-of-ai.html