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Rural SMEs in Australia

AI at the periphery

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Executive summary

Rural SMEs are likely to be impacted by the digital divide both due to their geographical location and the size of their organisation. With the rise of AI and the digital economy, concerns have been raised as to how rural SMEs are equipped to harness the beneficial aspects of AI and while defending themselves against the negative. This paper outlines the issue at hand and what policy is already in place across Australia as well as the major research initiatives that relate to rural SMEs.

We have looked at what is happening across Australia in the AI space and how that specifically addresses the issue of AI and rural SMEs. We have found that while there are some great initiatives underway, there is a need to really consider the average rural SME that is unlikely to be developing their own specific AI capability.

We showcase the research of PhD Candidate and CAIDE affiliate Susan Sheldrick who is investigating the impact of AI on rural SMEs in her PhD. Finally we have identified key areas most pressing for scholars in this space to explore - Workforce challenges, Non-agricltural SMEs and vulnerabilities in foreign-led tech providers

1 in 5
SMEs report using AI[10]

… but the figure must be higher given AI presence in Xero, MYOB, Social Media, Canva, even Google. This indicates and awareness issue

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Background

The Australian Federal Government have identified AI as a 'critical technology' in the national interest, supporting the development, commercialization and adoption of AI in Australian businesses. They have also provided specialised training and opportunities for SMEs to adopt AI responsibly in their organizations, and funding for regional PhDs in the area. In addition, the government has laid out a strategy for the Australia to become a top 10 digital economy and society by 2030[1], indicating an expectation of businesses and citizens to be digitally literate to be active economic participants.

It is important to consider how rural SMEs can be supported on their AI journey due to the existing digital divide, as well as the expectation that regional businesses will participate in the digital economy. By this we mean it is important to consider and support rural SMEs to ensure that they are able to capitalise on the benefits of AI and be protected against the nefarious actors.

There are plenty of opportunities for AI to enhance SMEs in rural Australia. Failure to adopt the technology could jeopardize their position in domestic and international markets. At the same time, there are concerns about the negative impacts of AI, which need to be addressed both in terms of the AI tools SMEs are using and the use of AI to court their business.

The challenges presented by AI in metropolitan areas are distinct to those presented in rural and regional communities. This is a result of the differences in workforce composition, internet access and awareness of possible use cases. These vulnerabilities should be proactively monitored by relevant authorities.

Developing policies to support the adoption of AI technologies is incredibly challenging. A report produced by the Commonwealth Government's *Small Business Digital Taskforce* found that some of the leading barriers to adoption of technology are insufficient knowledge, uncertainty around costs and benefits, slow internet speeds and a lack of skills within the business[2]. While the number of people with an IT qualification jumped by thirty six percent between 2016 and 2021, rural and regional areas already on the wrong side of the well documented digital divide, are less likely to have workforces able to take full advantage of AI[3]. Even if business owners have a sense that AI tools might support their businesses there is concern about whether the local workforce contains the necessary expertise to support the technology's adoption in the immediate and medium term.

All of this means that applications adopted are likely to be 'user-friendly' applications. While these tools are accessible, they also leave customers vulnerable to the decisions of the companies producing the technology. The Productivity Commission also notes that ninety eight percent of Australian businesses adopt innovative technologies rather than generate new technologies themselves[4].

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What is happening around Australia

Federal Government

There are several policies and initiatives designed to increase the usage of AI in rural SMEs. Most notably, the National Reconstruction Fund (NRF) is a $15 Billion strategy to diversity and transform the Australian economy[5]. The NRF highlights areas of competitive advantage while taking into consideration and accounting for the emergence of newly developed technology overseas. Industries prevalent in the regions such as agriculture, forestry, fisheries, and resources have been identified as sectors that might benefit from incorporating AI technologies into their production processes.

The National AI Center

The National AI Center, established in Canberra, is funded by the Federal Government, through the CSIRO to support and develop the local ecosystem. The main initiative in reach of rural SMEs is the free online introductory course, run in conjunction with TAFE NSW. The Next Generation Graduates Program has been to support post graduate students in AI to create a 'pipeline' to regional centers[6].

Rural SMEs are also able to tap offer a range of programs for SMEs to facilitate research and development[7]. These programs help SMEs by connecting them to other businesses and making available funding and expertise. One shortcoming of the National AI Center is that the support offered is generally geared towards technologically advanced SMEs. Without ensuring that less technologically advanced SMEs increase their AI literacy there remains a real risk that the digital divide will worsen if AI adoption becomes more widespread.

5 AI Adopt Centers are set to be established across the country assist SMEs grow their business with AI[8]. However, as the major AI clusters the country are in state capitals[9], it is fair to assume these centers will also be based in metropolitan areas.

Domains where Australia is publishing at a rate higher than the global average

4.8 x
livestock production

3.8 x
medical laboratory technologies

3.2 x
horticulture

The Australian Ecosystem Report [9] found AI applications in these domains are where we are publishing at a higher rate that the global average. 4.8 x livestock production, 3.8 x medical laboratory technologies & 3.2 x horticulture. 2 of the 3 top domains are going to be regional focused – horticulture and livestock.

Furthermore the research areas where Australia publishes greater than the average -food animals/ livestock, soil science, aquatic research, & horticulture are fields traditionally based in rural areas, indicating competitive advantage for Australian AI can be found in regional Australia

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What is happening around Australia

ARC Center for Automated Decision Making + Society (ADM+S)

The Australian Digital Inclusion Index has been led by ADM+S researchers since 2015. The data collected yearly across Australia provides an insight into how different communities and demographics compare with regards to accessibility, affordability and digital ability. Ranked on a scale from a low of 0 to a top of 100 the index measures important dimensions of digital inclusion to enable comparison of different regions and inform government funding priorities. Regional areas continue to score lower than metropolitan and national averages (see table 1). The highest scoring local government areas are in major cities (City of Melbourne 80, City of Yarra 79.7, City of Sydney 79.5), the lowest are in remote areas (Belyuen Community 50.4, East Arnham Regional Council 52.8, Aurukan Shire 52.1)[11]. The ADII data highlights areas of interest. Importantly it demonstrates the variety of digital experiences in regional Australia.

Another major research project lead by ADM+S researchers relates to the digital inclusion of first nations people. First nations communities in remote locations in Australia can be highly excluded from the digital realm, limiting their ability to participate fully in commerce, education and public debates. The research headed by Dr Featherstone highlights the need for First Nations leadership, co-design and co-delivery in activities to 'close the gap' as it relates to digital literacy and adoption[12].

Table 1: Digital inclusion index from 2023 [11]

Remoteness	Index	Access	Affordability	Digital Ability
Major cities	74.6	73.3	95.2	66.9
Inner regional	71.3	70.4	94.6	62.0
Outer regional	66.3	66.5	93.5	54.6
Remote	70.0	67.0	95.3	61.3
Very remote	62.6	55.1	93.8	56.6
National average	**73.2**	**72.0**	**95.0**	**64.9**

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What is happening around Australia

State & Territory Governments

Across the states there is an interest in the development of the digital economy. To date this interest has been expressed rhetorically as opposed to the development of policy initiatives. However, this is positive for the inclusion of rural SMEs in the AI space. State governments recognise that without adequate digital access and skills, rural SMEs are not situated to take advantage of the benefits that AI offers. To date, governments have been focused on implementing AI technology to improve government services. This has benefits for regional people but often does not explicitly address the issue of narrowing the digital divide through the empowerment of regional business owners.

All state and territory governments are investigating the use of digital technology for government functions and have developed or are developing AI policies to govern the role out[13]

South Australia

The state is home to the Australian Institute of Machine Learning (AIML) at the University of SA. The institute collaborates with SMEs, developing capabilities and new products or services with their SME partners[14]. Recently the recipient of a $12m funding injection ($6m each from the SA government and University of Adelaide) the Institute has committed to, amongst other things, helping “South Australian SMEs to develop AI-enabled products and services, automate processes and improve productivity”[15].

West Australia

Western Australia’s digital strategy focuses on Digital Inclusion through the Digital Farms Grant Program and Regional Telecommunications Projects.

Queensland

Of the state governments, Queensland has the most advanced response to AI, establishing the QLD AI Hub under the Advanced Queensland initiative. While the hub is based in the state capital, Brisbane, there are chapters in the regional cities of Cairnes, Townsville, Mackay and Bundaberg. In addition, they have previously completed road shows to other regional locations in the state hosting panels, talks and showcasing local AI opportunities[16].

They also released a digital economy strategy with 6 key priorities, with the goals of ‘closing the digital divide’, ‘improving connectivity for regional communities’, and ‘using the power of digital to help industries and businesses excel’[17] most relevant to rural SMEs. While these priorities do not explicitly address the challenges of rural AI adoption they speak to broader challenges influencing technology diffusion in Australia’s regions.

New South Wales

New South Wales has focused on the responsible use of AI in the delivery of public services. NSW Tafe delivers AI training programs in conjunction with the National AI Center. Course offerings include Generative AI for Business, Responsible AI and Cybersecurity micro-certificates.

Victoria

In Victoria, the East Gippsland Digital Confidence Program includes workshops on digital technologies including AI and sessions with a mentor to support local SMEs with their digital transformation. This program is delivered by local providers but funded through the state and federal government[18]

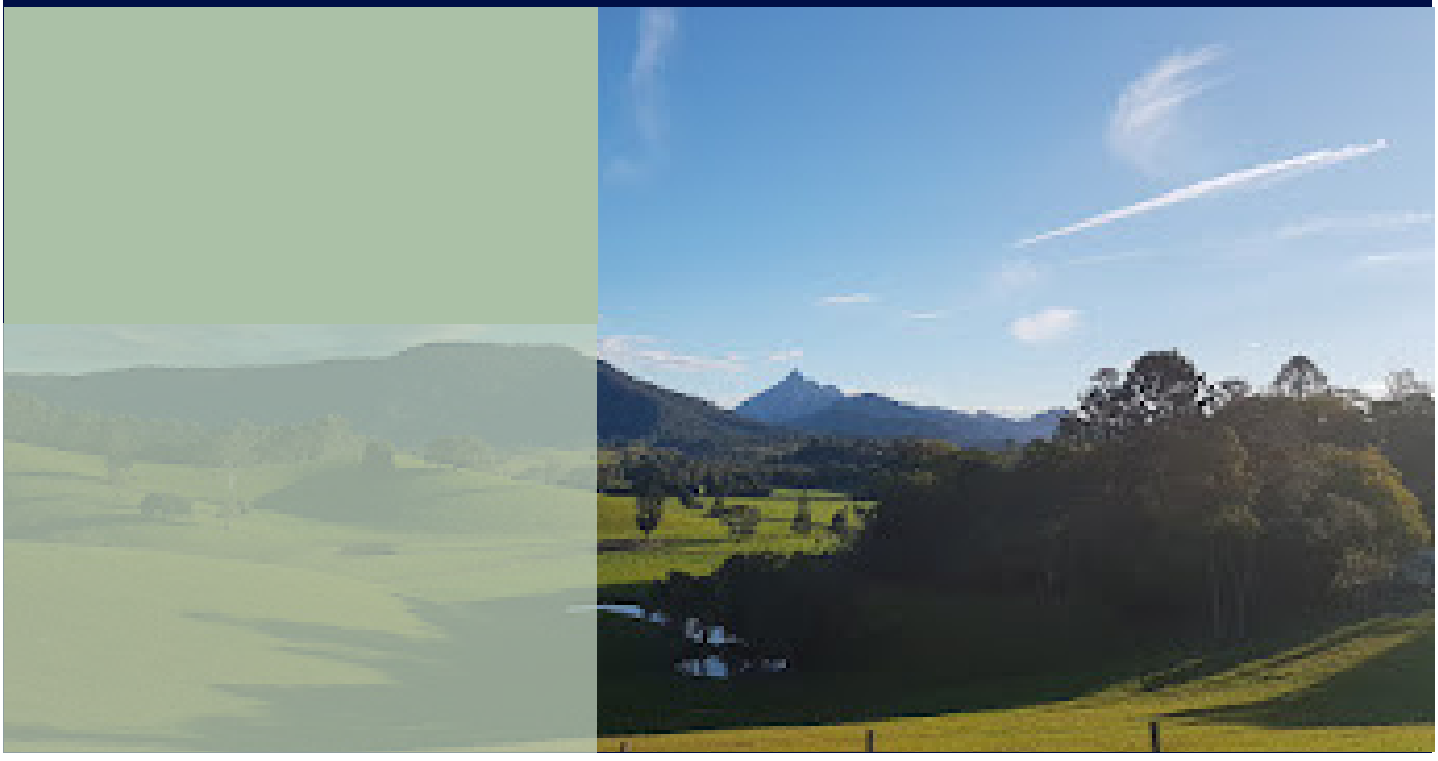
CAIDE Research: The impact of AI in rural SMEs

PhD Candidate and CAIDE affiliate researcher Susie Sheldrick, has been conducting qualitative research in rural SMEs both in Australia, and Northern Sweden. Her studies aimed to understand what forms of AI rural SMEs were using in their operations and the opportunities and barriers they face.

Overwhelmingly, the need to improve connectivity to rural Australian communities was highlighted. Issues with insufficient infrastructure, service outages and understanding of possibilities were raised. Additionally, there are concerns with how SMEs may utilise AI given the data and connectivity appetite of the technology, which only seems to grow.

The community's role was highlighted as a crucial factor in operating rural SMEs which they rely on for exposure to innovative technologies such as AI, advice for adopting and at times motivation to adopt. Furthermore, for organisations in industries that are not common in rural areas – such as in the creative industries – the need for an online community is greater.

Finally, there is a need to develop innovative and relevant upskilling initiatives that encompass AI as well as cybersecurity and digital skills in general. There are a variety of needs that need to be considered on this front. Businesses and industries are all using different forms of AI with different levels of risk to the SME and their stakeholders. While general introductory online courses are a great resource, they need to be supplemented with targeted information and alternative learning formats[19,20,21].



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Recommendations for further research

Before reading through the recommendations, we want to emphasize that in dealing with the digital divide in rural areas, there is no one size fits all solution. The experience of the digital divide varies among regional SMEs depending on their size, for example, the gap is felt more acutely in rural compared to regional areas[22]. Consequently, initiatives need to focus on community inclusion to ensure the focus area is aligned with local needs and desires.

Workforce challenges

The introduction of digital technologies particularly attempts to introduce robots to agricultural practices presents a number of challenges for not only regional businesses but so too workforces. While unions have won somewhat favourable conditions for workers in the regions the opportunities for increasing profit and reducing the liabilities associated with human workers presents novel threats to the stability of regional workforces.

Furthermore, AI introduces the prospect of increased surveillance of workers on farms. A growing body of academic and community-sector research has sought to articulate the influence of these technologies, however, we propose a technology-positive and proactive approach to mitigating the threats to regional workforces. It is possible to leverage the potential improvements to business efficiency presented by AI technologies by ensuring adequate training and the development of technologies designed to augment, not replace or surveil humans.

Research conducted does not indicate an immediate transition to robots, despite the increased rhetoric of internet of things adoption. Rather, the immediate threat is a lack of awareness of opportunities to use AI enabled technologies and the reality that many applications are developed overseas. Domestic development of agricultural technologies is essential to ensure that Australian labour practices and attitudes are reflected in the technological applications produced. Developing an awareness of the commercial opportunities presented by AI is essential to ensuring protection of regional industry and workforces.

Non-agricultural SMEs

While the agricultural sector dominates in many rural and regional communities, non-agricultural SMEs are also significantly impacted by poor internet access and the lack of ICT workers. Small business owners in regional communities, when asked, said that the internet opened up opportunities to reach new markets and sell their products. Marketing and sales through social media in particular is essential to the success of many regional small businesses. However, during interviews many of these small business owners said that beyond accounting and bookkeeping software they did not see opportunities to use technology to their advantage.

Due to the physical isolation from others in their industry, SMEs in rural areas outside dominant industries are likely to experience the digital divide in a different way. Some may be more internally motivated to adopt advanced technologies such as AI to minimise the divide or isolation, where as others could be come further excluded.

Furthermore, it is essential that rural and regional Australians are given access to improved training and information about existing digital products. The digital ability measure off the ADII should include a measure that describes the digital ability of people as it relates to commercial activities.

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Recommendations for further research

Vulnerabilities in international led innovation

The business model of international technology companies arguably leaves Australian industries and customers reliant on their technologies vulnerable to exploitation and the country poorer for failing to capture any of the value generated by user data [23]. Efficiency gains, achieved through analysis and use of user generated data, makes digital agricultural products more desirable and essential to operations to remain competitive. In the agricultural industry this takes on greater significance given the importance of domestic farming to Australia's food security [24]. If Australian growers are increasingly reliant on technologies developed overseas and sending their data abroad to improve the products of foreign owned companies' Australian businesses would be supporting their monopolisation of the market. Failure to act now on this issue would be akin to locking Australian growers in an ongoing cycle of reliance with international companies. This relationship can be considered more exploitative than those with international producers of equipment because of the value that is gained from the sharing of data and the industry standard, subscription-based pricing model [23].

The relationship is made even more dubious when you consider the deficit in digital skills in many regional and rural areas. Where farmers might buy foreign made equipment, say a tractor, there is a larger and more accessible workforce of people who are able to fix, improve and evaluate the equipment needed for the farmer's chosen application. The lack of an appropriately skilled workforce in regional areas leaves the agricultural sector vulnerable to exploitation by technology companies, who might offer reliable customer support[25].

We reiterate our concerns about the vulnerabilities produced by reliance on foreign-owned digital platforms that rely on user generated data for their continued improvement. In order to mitigate this we propose an increase in funding for domestically produced software that meets the needs of SMEs in rural and regional Australia (an example here would be good). In the agriculture and forestry space, TerraCipher works with clients to utilise data analytics to grow while protecting and supporting data contributors through their innovative platform[26].

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Conclusion

Conclusion

Given the expectations by government, the market and consumers for SMEs to be digitally literate, and the advances in AI that can both help and hinder their efforts, it s clear that support is needed. Additionally, rural and remotes SMEs

The Australian Federal Government has committed to the developing SME AI capacity, primarily through the Nation AI Center. However, this and the initiatives taken across the various State Government are not sufficient in themselves for addressing the AI divide for rural SMEs.

Through our research, we have highlighted the need for improved connectivity infrastructure, targeted and customized upskilling opportunities and the need to enable communities to be at the head of initiatives for their areas. Furthermore, we have identified areas we suggest are prioritized by researchers; Workforce challenges, vulnerabilities of foreign-led innovation and non-agricultural SMEs

We welcome further discussion on rural SMEs and AI and encourage all interested parties to reach out to authors if you would like to participate further.

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