

Technology Adoption in Australian Industry

Commercial, workforce and regulatory drivers

OCTOBER 2024



About Australian Industry Group

The Australian Industry Group (Ai Group®) is a peak national employer organisation representing traditional, innovative and emerging industry sectors. We have been acting on behalf of businesses across Australia for over 150 years.

Ai Group and partner organisations represent the interests of more than 60,000 businesses employing more than 1 million staff. Our membership includes businesses of all sizes, from large international companies operating in Australia and iconic Australian brands to family-run SMEs. Our members operate across a wide cross-section of the Australian economy and are linked to the broader economy through national and international supply chains.

Our purpose is to create a better Australia by empowering industry success. We offer our membership strong advocacy and an effective voice at all levels of government underpinned by our respected position of policy leadership and political non-partisanship.

With more than 250 staff and networks of relationships that extend beyond borders (domestic and international) we have the resources and the expertise to meet the changing needs of our membership. We provide the practical information, advice and assistance you need to run your business. Our deep experience of industrial relations and workplace law positions Ai Group as Australia's leading industrial advocate.

We listen and we *support* our members in facing their challenges by remaining at the cutting edge of policy debate and legislative change. *We provide solution-driven* advice to address business opportunities and risks.

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Introduction

Australian industry is currently navigating a complex and difficult economic environment, characterised by low growth, high inflation and tight labour markets. Investment in new technologies is proving instrumental in helping businesses respond to these challenging conditions.

In mid-2024, we conducted our first *Technology Adoption in Industry* survey of Ai Group members. Our purpose was to understand how business leaders are approaching technology issues at a time of rapid change in our economy, society and technology landscape.

Transformative technologies – particularly artificial intelligence (AI) and those associated with the net zero transition – are rapidly reaching maturity and dominating procurement decisions. But challenging business conditions in Australia today are making long-term technology plays a more difficult proposition than before.

How are business leaders balancing these imperatives when making technology choices, and what is shaping their future investment pipeline?

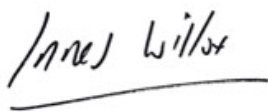
We have found that improving productivity is the major objective for business technology adoption. 84% of businesses report having active technology projects. Increasing operational efficiencies, reducing rising costs, and managing a constrained workforce were the key drivers. Business leaders see technology as an essential productivity-enhancing strategy to respond to challenging conditions.

Around half of businesses also report they are adopting AI or net zero technologies. Such strong 'early adoption' rates are a pleasing finding. AI technology is viewed as a significant driver of productivity, while net zero adoption is being driven by policy requirements cascading through supply chains.

The most significant challenge is workforce capability. Business leaders report that a lack of skills stifles uptake rates and ensure that technology projects are paced to match workforce development. This is a risk – that workforce constraints holds back our ability to invest and innovate with technology.

Uncertainty over regulatory settings also holds deployment back, particularly for newer technologies. Business leaders report they understand the need to manage AI safely and would welcome clearer guidelines to deploy with confidence. Uncertainty over climate and energy policies – and the impacts on being able to assess commercial returns – is also a major barrier to greater net zero investment. Sensible, stable and straightforward regulatory settings would unlock greater technology investment.

Industry's prioritisation of technology is very welcome given Australia's poor productivity performance in recent decades, and is one of the keys to turning it around. One of the best ways to drive productivity outcomes will be to address the workforce constraints and regulatory gaps holding our technological progress back.



Innes Willox
Chief Executive, Australian Industry Group

Key insights

Technology investment is a key to productivity gains, but workforce constraints and regulatory gaps inhibit greater uptake

1. **Industry is overwhelmingly optimistic about technology upgrades, with 84% of businesses reporting active adoption.** Most consider technology an essential adjunct to achieving their broader strategic goals for new business development, managing workforce constraints and competitive positioning.
2. **Business leaders' primary motivation for technology investment is improving productivity.** This has grown in importance recently due to the challenging economic conditions and tight labour market. External requirements – from regulators, supply chains and/or funders – are less of a driver.
3. **Despite Australia's general anxiety about AI, 52% of businesses already report adoption of AI technologies.** Services leads industrials in AI uptake due to lower barriers to entry. Business leaders view AI investments in the same terms as general tech – a means to improve efficiency and drive productivity outcomes.
4. **Technology required for the net zero transition is being adopted by 45% of businesses.** Industrials lead services due to their greater emission intensity. Net zero investments are primarily driven by regulatory rather than commercial objectives, as emissions reduction is mandated across the supply chain.
5. **Workforce capability is the greatest barrier to technology uptake, with half (54%) of business leaders reporting skills constraints.** The key concern is the capability of staff to effectively utilise new technology and adjust to new business processes. This points to the link between labour constraints, skills shortages and industrial flexibility in unlocking greater technology investment in Australia.
6. **Financial risks are also cited as a leading barrier to adoption, affecting general, AI and net zero technologies alike.** Business leaders are unsure of return on investment, and often struggle to secure financing. Current weak economic conditions are also making it harder to commit to major projects.
7. **Regulatory gaps are also a barrier for AI and net zero investments.** Immature regulatory settings for AI makes business leaders uncertain about how to deploy AI safely; while energy policy uncertainty clouds the return on investment for net zero. Greater regulatory clarity and certainty will go a long way to unlocking a larger wave of AI and net zero investment in industry.

Technology adoption rates are high despite slow economic conditions

Technology investment is critical for the productivity, competitiveness and growth of Australian industry. Whether improving efficiency, innovating new products, better utilising the workforce or achieving the net zero transition, the adoption of new technologies is a precondition for our industrial success.

In the Ai Group Technology in Industry Survey 2024, we asked businesses across the economy about their technology adoption practices. What new technologies were their businesses implementing, what were their investment priorities, and what factors were enabling and constraining adoption?

Australian industry is very actively engaged in upgrading technology. 84% of business leaders report they are currently adopting new technology into their operations. All large businesses reported active projects, with medium (82%) and small (63%) businesses also reporting high rates. Industrial firms (83%) are upgrading general technology at faster rates than services firms (73%).

“Our technology investments increase our output, efficiency and product quality, all of which improve our competitiveness” – construction materials manufacturer

We also asked businesses about their adoption of two specific forms of technology: artificial intelligence (AI) and net zero technologies.

Despite the recent surge in AI capability with the commercialisation of Generative AI technologies and some general nervousness around AI in Australia, 52% of businesses report some form of current AI adoption. This can include both standalone AI systems, as well as AI which is embedded into the existing technology stack (such as chatbots). AI adoption rates are associated with business size, with higher rates for larger sized businesses, and services (56%) report greater uptake than industrials (38%).

Similarly, 45% of businesses report current adoption of net zero technologies. These can include both those which reduce emissions directly (such as energy efficiency or electrification technologies) and those to manage a business’s carbon footprint (such as monitoring systems).

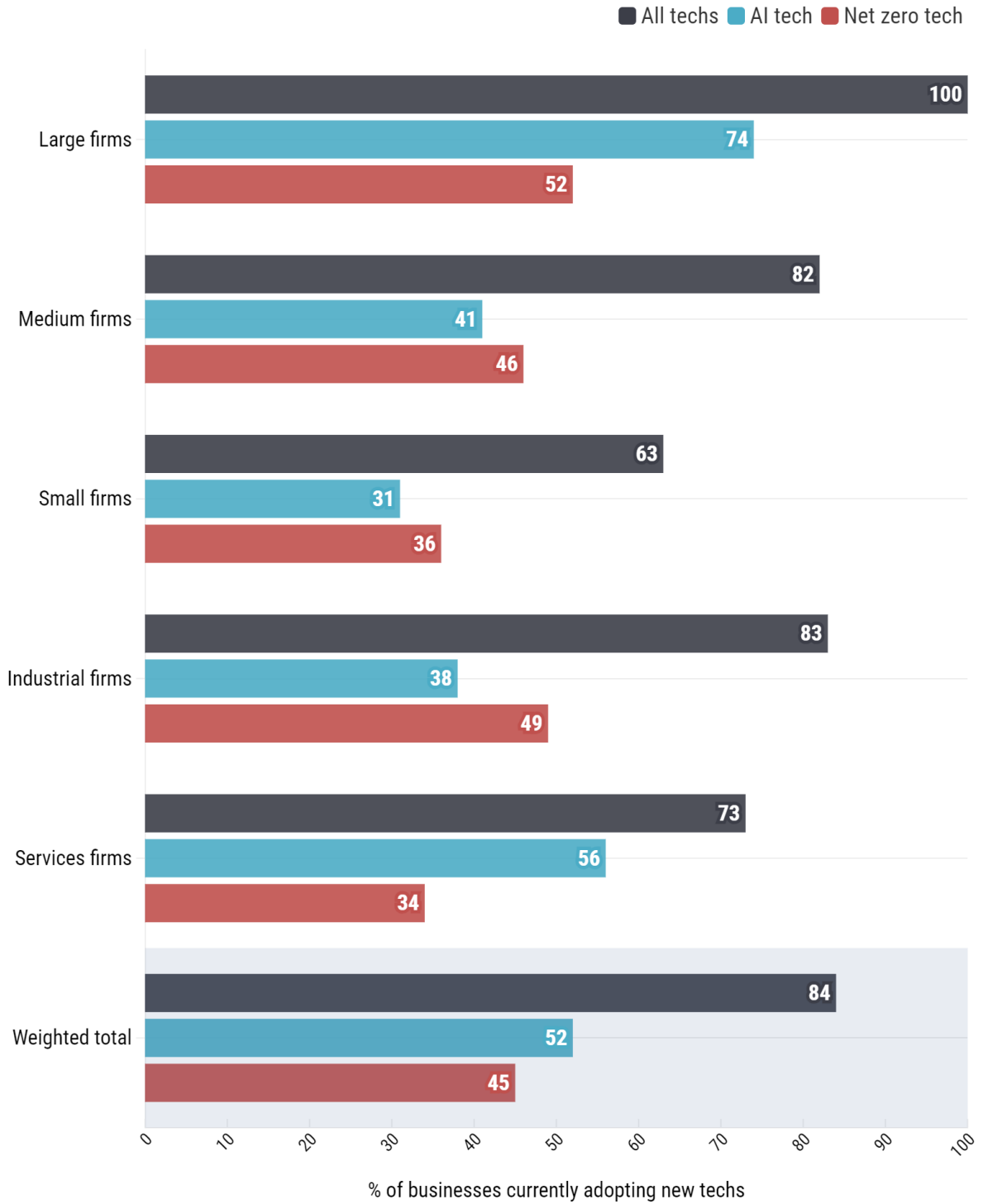
These high rates of technology adoption are particularly welcome given the weak business conditions in Australia. GDP growth is currently at its lowest level since the recession of the early 1990s, and private capital expenditure grew by an anaemic 0.3% over the last year. That technology adoption rates remain so high amidst weak conditions points to its importance for businesses.

“Our biggest risk at the moment is market conditions, but we continue to invest in technology to keep us competitive” – TCF manufacturer

“We have to keep improving technology to stay ahead of our competitors” – industrial automation vendor

Why are businesses undertaking these high levels of technology adoption? To understand how businesses approach their technology investments, we further explored the role of technology in their strategic orientation.

Technology adoption rates in Australian industry



Source: Ai Group Technology in Industry Survey 2024

Market conditions and workforce constraints are shaping technology investment in industry

Businesses do not invest in technology for its own sake. Deploying new technologies is a complex undertaking, involving significant upfront costs, changes to processes, and impacts on the workforce. New technology projects must compete with other operational priorities, and demonstrate they can contribute to overall business strategy.

To understand how technology investments are currently weighed by business leaders, we asked about the factors shaping their business over the next year, and the role of technology in their strategies.

When it comes to expected business impacts, two themes stood out: market conditions and workforce constraints. Nearly half of businesses (47%) reported that changing customer demand would be a leading concern in 2025, while a quarter (26%) cited increasing competition. Workforce issues also loomed large, with workforce availability (30%), wages costs (27%) and knowledge and skills (22%) all identified as constraints shaping operations.

“Business conditions, a lack of off the shelf solutions, and high costs are weighing on our ability to invest in technology” – metals manufacturer

“Labour costs are currently my largest growth inhibitor” – maritime manufacturer

These responses are consistent with business conditions in the Australian economy. However, it also means that technology investments have taken a back seat in business strategy. When we asked about focal points for 2025, business leaders emphasised ‘back to basics’ type approaches:

- New business development to address weak market conditions was a lead focus for 54%
- Improving workforce fit to manage labour constraints and/or costs was cited by 43%
- Innovation – in both business processes (29%) and products (27%) – were also a major focus to control costs and respond to competitive pressures.

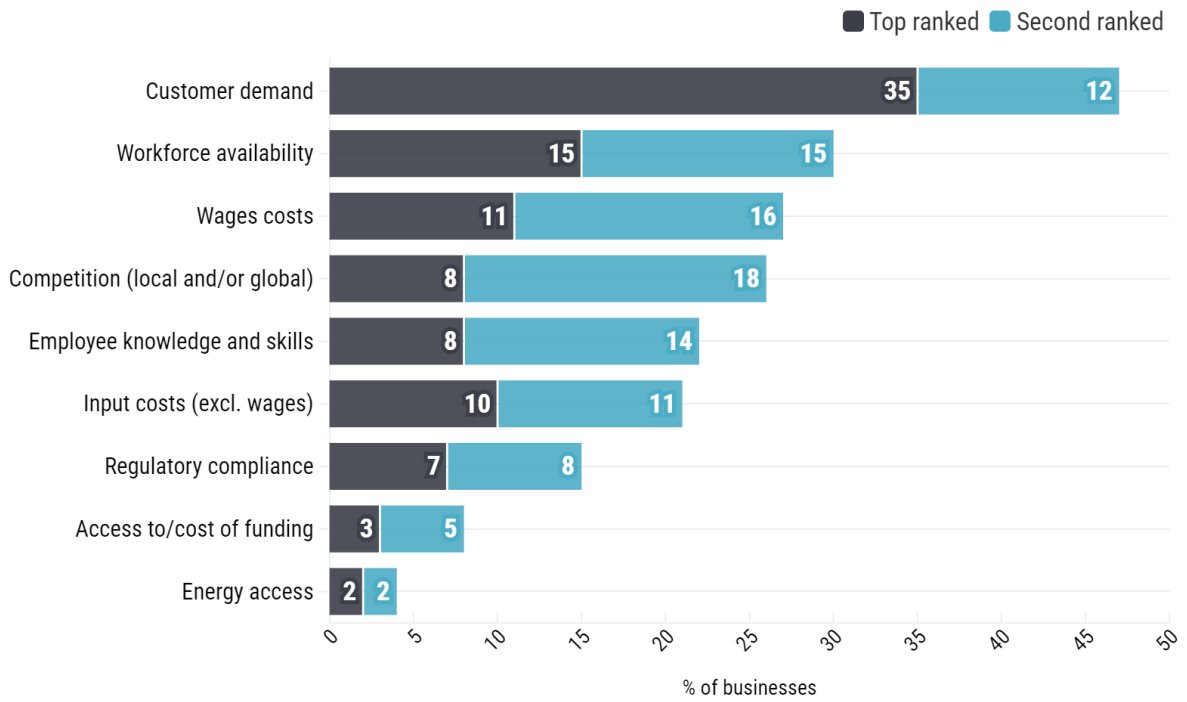
These strategies respond to current economic conditions in Australia, and the need for businesses to increase sales, control costs and/or better utilise constrained workforces.

In contrast, technology ranked lower on the priority list. Only 23% of businesses reported that technology adoption was a lead focal point for 2025. For specific niches – such as net zero (7%) and AI (4%) technologies – only small minorities indicated they were a leading business priority. This indicates that technology adoption is subordinate to broader goals in business strategy.

“[Our main technology objective] is to increase productivity and reduce costs” – transport equipment manufacturer

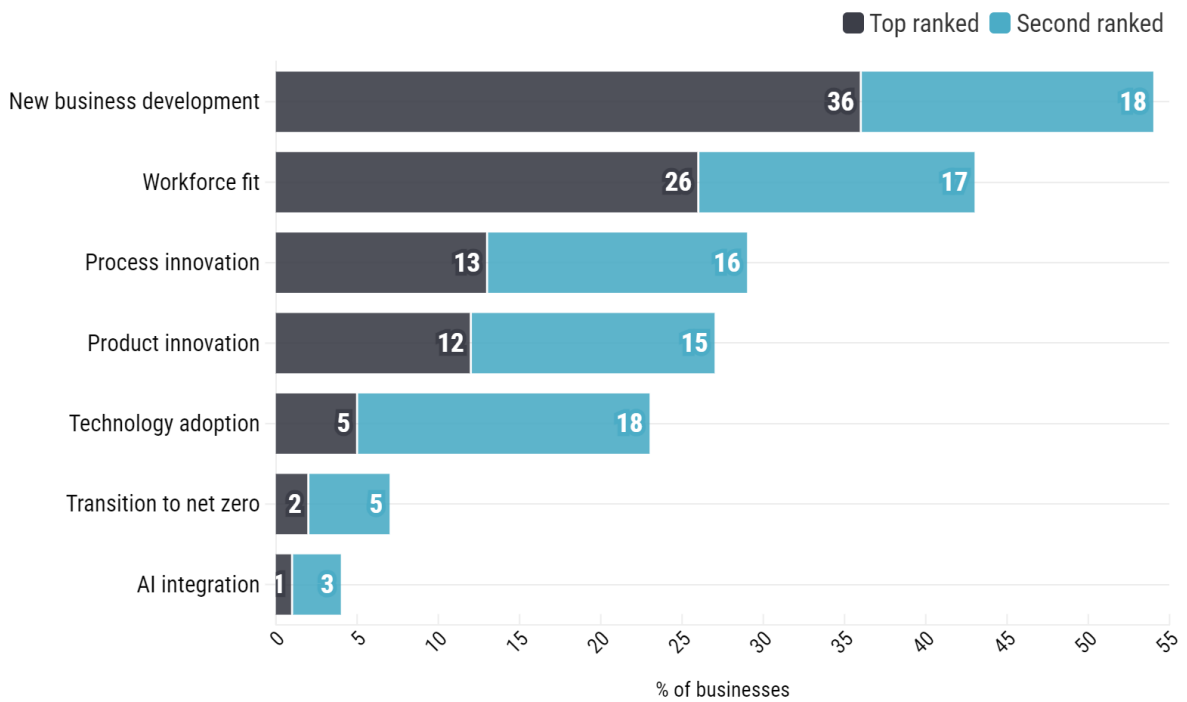
This data does not suggest that businesses are deprioritising technology – indeed, 84% still indicate they are currently in the process of active adoption. Rather, it shows that technology projects are not an end in themselves, nor do they necessarily lead business strategy. Technology investment is the consequence of strategy, not a strategy on its own. It complements and supports the leading objectives of a business, which at present is focused on building new markets and managing constrained workforces.

Factors expected to impact business in 2025



Source: Ai Group Technology in Industry Survey 2024

Key focal points for business over the next year



Source: Ai Group Technology in Industry Survey 2024

Technology investment targets productivity, but is limited by workforce capability and financial risk

Business leaders report that increasing operational efficiencies is the primary reason they are adopting new technologies. A dominant 88% reported efficiency benefits as a leading motivation, more than double any other factor. This reveals a clear link between technology and productivity, and the need to improve in-house processes to manage cost pressures and workforce constraints.

“We are investing in technology and data to ensure we are getting the business basics right” – financial services provider

Market-side factors play a less prominent but still meaningful role. Expected return on investment was reported by 42% of businesses, while market influences (such as the need to meet competitors’ offering) were cited by 40%. This aligns to the high priority which is currently placed on business development and responding to competitive market pressures.

Perhaps surprisingly, external requirements ranked very low as a technology adoption factor. Only a small minority reported that either supply chain (24%) regulatory (10%) or funding (3%) requirements were a lead driver for their technology investments. Technology investments are largely shaped by factors internal to the business and its markets, not the external requirements of stakeholders.

When we look to the factors inhibiting technology adoption, workforce capability gaps were the most common constraint cited by around half (54%) of businesses. This relates to the ability of the existing workforce to use new technologies effectively and productively, and points to the need for supporting investments in staff capability.

“Our technology challenge is having the time, and whether our staff have the capabilities to learn new skills” – mining services provider

“Staff capability and business adaptability to new technology is key” – food manufacturer

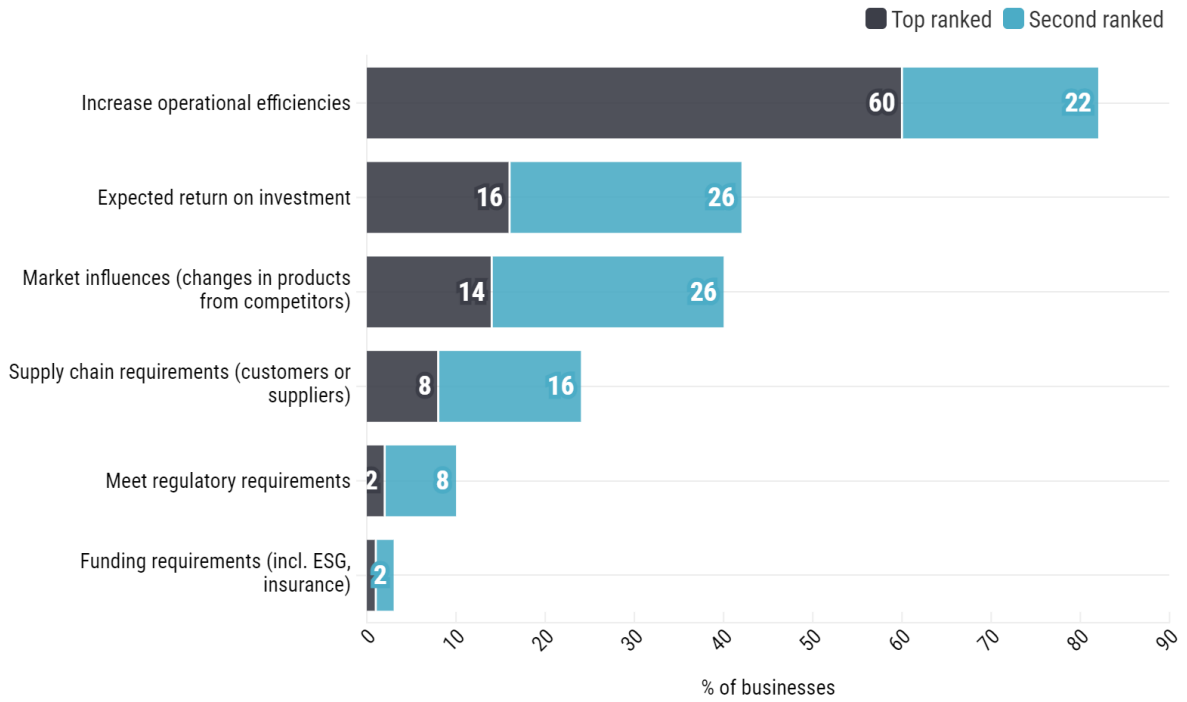
Financial risk factors also ranked highly, with 43% citing unclear return on investment and 36% costs and availability of funding. Uncertain business conditions were also cited by a quarter as an inhibitor. This reflects the inherent risk in technology projects – even when deploying mature technologies – and points to a need for greater access to risk capital during difficult economic conditions.

“Uncertain economic conditions, particularly interest rates, hold our tech investments back” – medical manufacturer

There is also clear evidence of a mature and sophisticated marketplace for industrial technology in Australia. Only one-third (31%) of businesses listed their own knowledge of available products as an inhibiting factor, while just 8% cited a lack of commercial partners. Regulatory risks were pleasingly low, with only 2% reporting regulatory factors as an inhibitor.

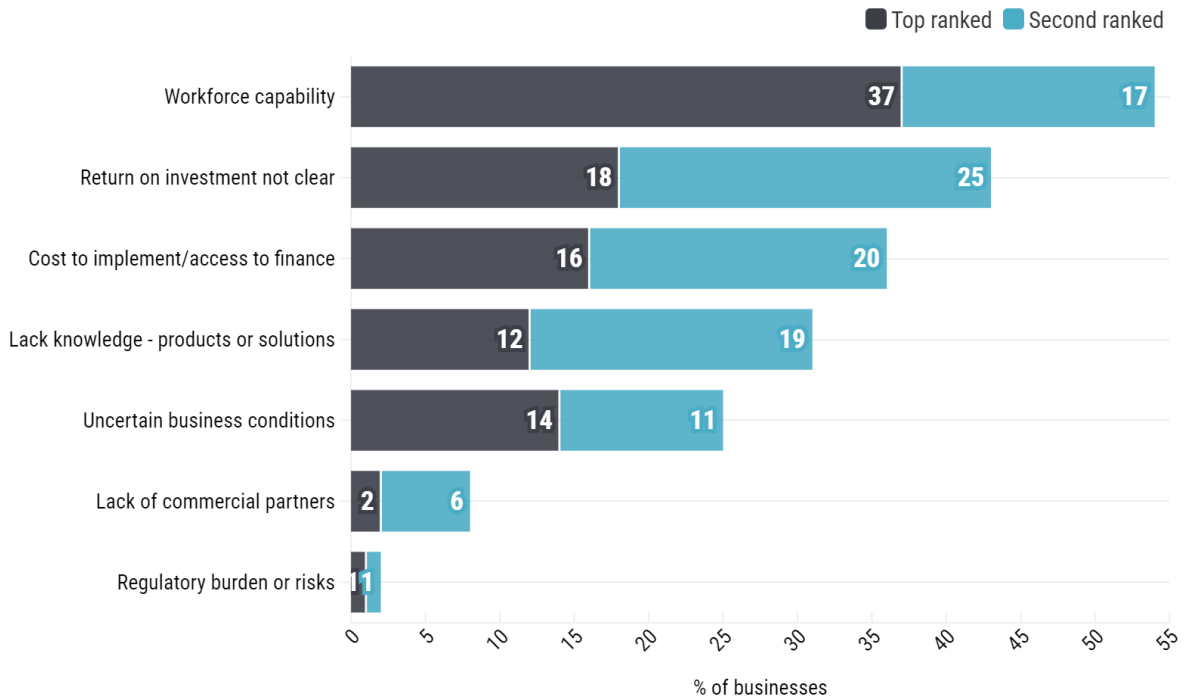
These findings reaffirm a well-established proposition: that the uptake of technology is as much about people as it is about the technology itself. Industry’s main motivation to invest is to improve the efficiency of operations in a period of workforce constraints, yet uptake is itself limited due to the capability limits of the workforce.

Motivations for the adoption of general technologies



Source: Ai Group Technology in Industry Survey 2024 • "General" technologies are those which exclude artificial intelligence and net zero products

Inhibitors for the adoption of general technologies



Source: Ai Group Technology in Industry Survey 2024 • "General" technologies are those which exclude artificial intelligence and net zero products

Half of businesses are experimenting with AI, but skills base and regulatory development is needed

Around half of business leaders (52%) report they are currently adopting some kind of AI technology. While this is lower than the 84% reporting non-AI technology investments, it is still a surprisingly high rate.

AI products remain in a phase of rapid maturation, and at present are usually limited to AI embedded in existing technology stacks (such as CRM software). This is evident in uptake rates, with services businesses reporting higher adoption (56%) than industrials (38%). As AI continues to mature and more sophisticated products become commercially available, it is expected adoption rates will grow further.

“We are optimistic that AI presents us a huge opportunity for growth, if we can work out how best to integrate it” – business services provider

Despite high expectations for the transformative impacts of AI in industry, business leaders report objectives which are remarkably similar to those for other technologies. The overwhelming majority (89%) report that improving business efficiency is a lead motivator for AI adoption, with expected RoI (47%) and market influences (43%) close behind. These AI objectives are nearly identical to those for reported general technology adoption.

This suggests that business leaders view AI in the same terms as non-AI technologies: a means to improve internal productivity and/or better position themselves in the marketplace.

The factors limiting AI uptake also closely mirror those for general technologies. Workforce capability (51%) is the lead inhibitor, reflecting the need to pace AI deployments in line with growing staff understanding and skill. Unclear RoI (27%) and financial considerations (21%) also affect some businesses.

“There are limited graduates with AI/advanced technology qualifications looking to work in manufacturing” – transport equipment manufacturer

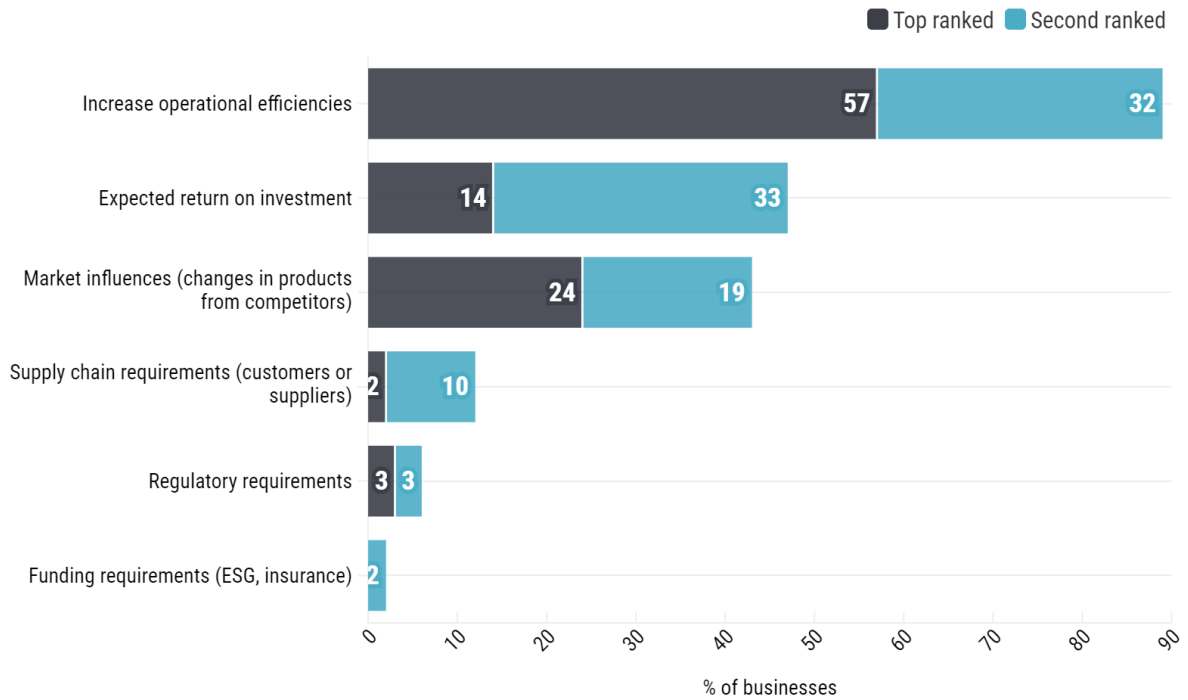
“Our challenge is effectively using AI: identifying compelling and reasonably priced opportunities, and training people from the ground up to use it” – financial services provider

However, businesses report two inhibitors specific to AI adoption: a lack of product knowledge and understanding (48%) and perceived business risk (26%). These factors reflect the still-developing maturity of AI technologies, and the limited base of skills and experience for both vendors and customers alike to draw upon. Perceived risks – including but not limited to cyber security – is of particular concern to some business leaders, who express reservations about developing controls and safety guidelines.

“AI is still in its infancy, and without the appropriate controls and precautions it could pose a significant risk or unintended consequences.” – electrical equipment manufacturer.

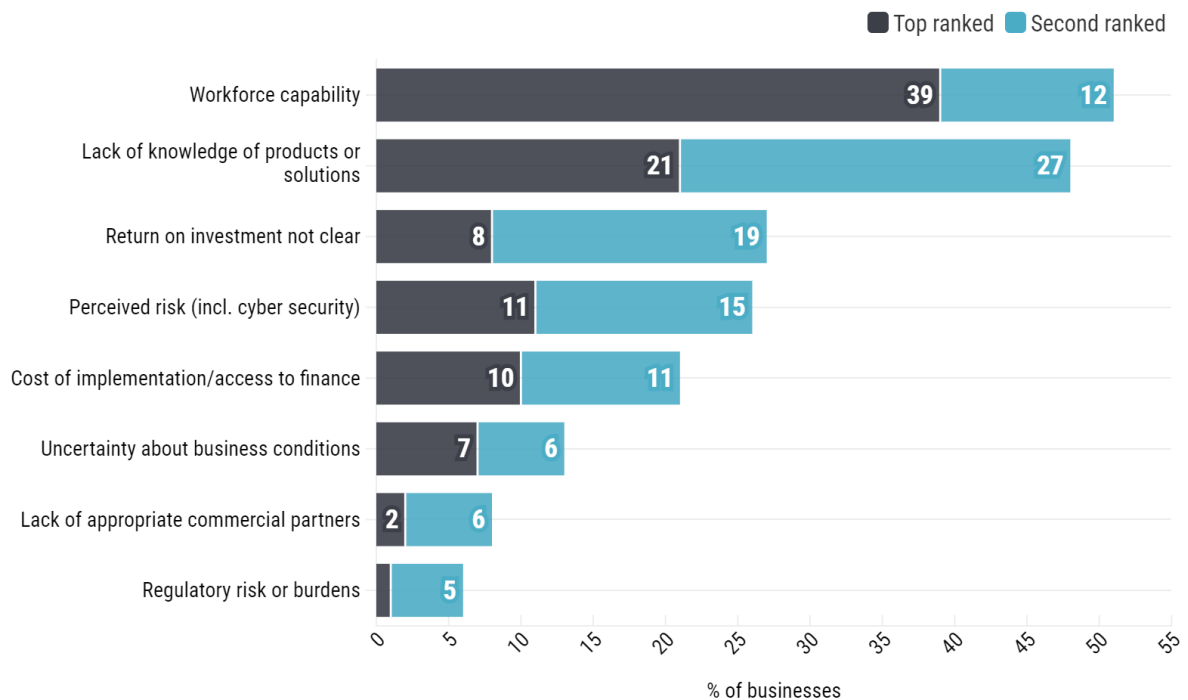
This points to the importance of two factors – workforce and regulation – in fostering greater uptake of AI in Australia. As the technology rapidly advances it is likely that new products will broaden accessibility to a wider range of businesses, particularly for industrials. But without an AI capable workforce, or reliable standards for safety and control, businesses will remain hesitant to make further commitments.

Motivations for the adoption of AI technologies



Source: Ai Group Technology in Industry Survey 2024

Inhibitors for the adoption of AI technologies



Source: Ai Group Technology in Industry Survey 2024

Decarbonisation is now mainstream, but policy uncertainty inhibits net zero deployment

Nearly half of business leaders (45%) report they are making some form of investment in technologies to support the net zero transition in industry. Like AI, this is a very strong result. The strongest imperative for adopting net zero technology is currently faced by large industrials with substantial scope 1 (i.e. self-generated) carbon emissions, which constitute only a very small proportion of businesses.

That a sizeable minority across all categories are adopting these technologies – even 36% of small and 34% of services businesses report adoption – shows that net zero transition is now a mainstream business concern.

We are optimistic about decarbonisation, as we have the skills for hydrogen, concentrated solar thermal, heat recovery and electrification” – engineering services provider

The motives for net zero adoption differ greatly from other technology types. Regulatory requirements were cited as a lead motivator by 41% of businesses, and supply chain requirements by another 40%. These were not significant factors for other technology types. The opportunity to increase productivity or make a positive return were also lower ranked for net zero than other technologies.

This indicates that net zero adoption is primarily being driven by government policy and regulatory settings – either those directly applied to businesses, or those which disseminate along supply chains as they become industry-wide standards.

However, commercial considerations do play a major role in *inhibiting* net zero adoption. Unclear return from net zero technologies (60%), and cost/financing challenges (51%) were the highest ranked inhibitors. Uncertain business conditions were also cited by a third of businesses (36%), a higher rate than for other technologies.

Business leaders reported that a lack of certainty around energy policy was the major inhibitor, as it harms business’ ability to assess potential returns and thus confidently make investments:

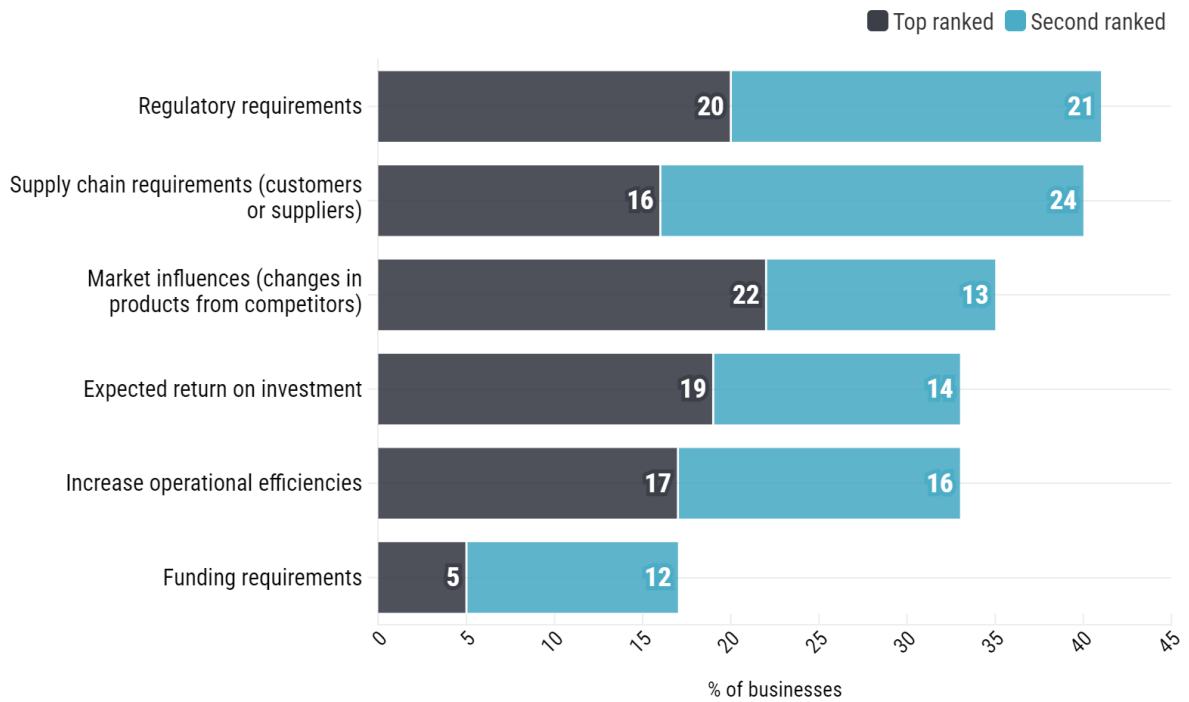
“We have a huge opportunity to develop decarbonisation products for industry, but investment is being destabilised by policy uncertainty” – transport equipment manufacturer

We are pessimistic on there being coherent regulation from the government on decarbonisation [needed to facilitate further investment]” – electrical equipment manufacturer

Workforce capability issues – which were identified as the leading challenge for other technologies – were comparatively lowly ranked (10%), as were the availability of commercial partners (8%). This suggests that adoption of current types of net zero technology are not constrained by workforce limitations. However, as industry moves towards more advanced and challenging applications – particularly for hard to decarbonise sectors – it is likely that workforce gaps will become more pressing.

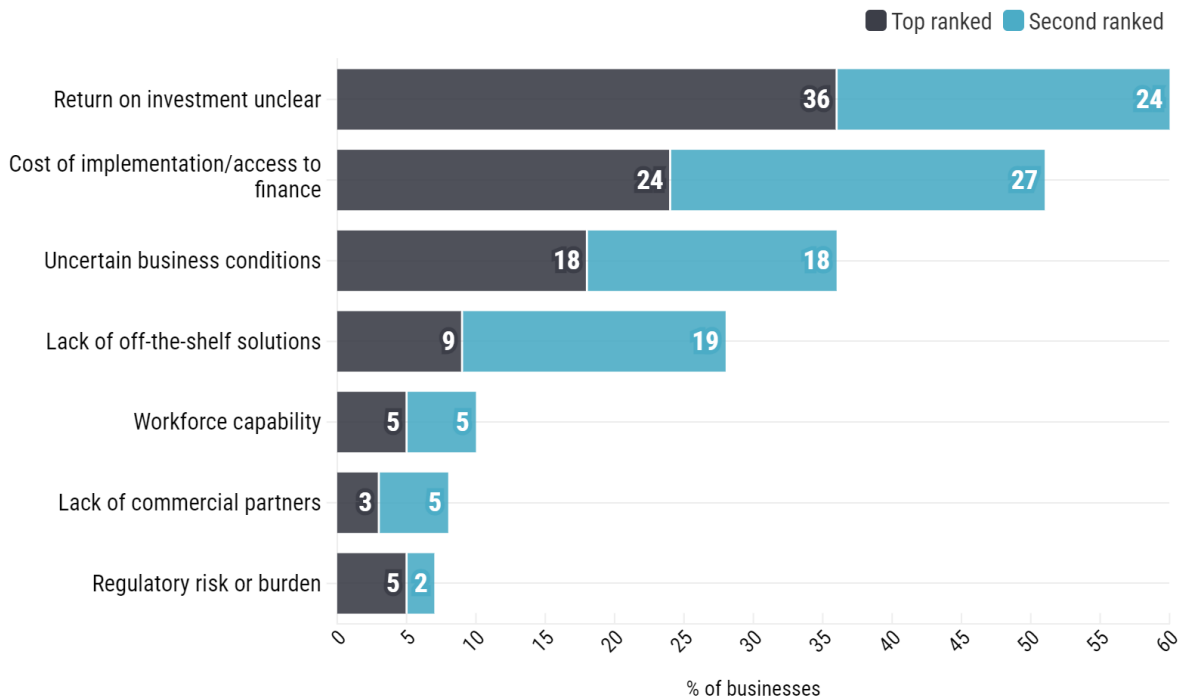
This points to the need for policy to address commercial barriers to further net zero adoption. Businesses are making these investments in response to policy and supply chain signals but face significant commercial risk in doing so. Greater policy certainty that can reduce this risk will increase investment and adoption rates.

Motivations for the adoption of net zero technologies



Source: Ai Group Technology in Industry Survey 2024

Inhibitors for the adoption of net zero technologies



Source: Ai Group Technology in Industry Survey 2024

About the Ai Group Technology Adoption in Australian Industry Survey

The *Ai Group Technology Adoption in Australian Industry* survey asked leaders in industrial businesses about their practices and investments regarding general technology, artificial intelligence and net zero technology adoption. Its questions cover investment priorities, factors influencing decision making, motivators and constraints.

The survey was administered in August and September 2024. Responses were received from leaders of 182 private-sector businesses across Australia. Collectively, these businesses employed 27,271 people and had aggregate annual revenue of just under \$14 billion in 2023. All Australian states, and private sector industries, are represented.

- The industrials grouping contributed the highest proportion of respondents (65%) and is an aggregate of manufacturing, construction, mining and defence.
- The services grouping includes IT, communications & media services; transport, post & storage services; wholesale trade; retail trade; finance & insurance; real estate & property services; professional services; and administrative services.

Data presented in this report is weighted by share of employment by business size range (based on ABS estimates in *Australian Industry, 2023-2023*) in order to adjust for the characteristics of the sample.

Summary statistics of the survey sample, target population and weighting coefficients are below.

Ai Group Technology Adoption in Australian Industry	Large	Medium	Small	Industrials	Services	Total
Number of survey respondents	35	89	58	118	64	182
% of survey respondents	19.2%	48.9%	31.9%	64.8%	35.2%	100%
Size coefficient (%) for weighting	33.85%	24.63%	41.52%	-	-	100%



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