

Appendix 10. Skills and Capabilities for Australian Enterprise Innovation

Introduction

Australia needs an innovative, flexible and creative workforce with the skills and capabilities to enable the country to secure its future productivity. Technical and scientific capabilities are critical to innovation, but innovation also requires people who understand business, systems, culture and the way society uses and adopts new ideas. This project examines the way that Australia's high-performing enterprises identify, manage, build and mix the capabilities to succeed.

Drawing on extensive research and data, the report by the Australian Council of Learned Academies (ACOLA), SAF10 *Skills and Capabilities for Australian Enterprise Innovation* (<http://acola.org.au/wp/saf10/>) investigated the extent to which technical and non-technical skills underpin innovation, how they interact to meet innovation challenges, and the potential for industry, education and government to properly invest in the skills and capabilities that support enterprise innovation. This report builds on those summarised in Appendices 4, 5 and 9.

Australia needs to improve the way it turns knowledge inputs into outputs to become a more efficient and successful innovator. The manner in which Australian enterprises use and manage skills and capabilities is a critical component of the broader strategy needed to enhance Australia's innovation performance.

This report represents the first in-depth investigation of how many of Australia's best-known innovative enterprises build and combine the technical and non-technical skills to drive the development of new products and services and to capture new markets and consumers. In the process, it explores potential mechanisms for achieving more efficient and effective innovation outcomes.

Australia's innovation performance

The 2015 Global Innovation Index reveals that Australia is a relatively inefficient innovator. Australia's overall ranking for innovation inputs is a reasonable 10th. However, our overall ranking for innovation outputs is 24th. This means our innovation efficiency is low. The index shows that Australia has the relevant skills but lacks the capacity to manage and use these skills and other inputs for innovation.

The most often stated challenge to innovation reported by innovative businesses is the lack of access to the additional funds required to develop and implement innovation. However, the Australian Bureau of Statistics's Business Characteristics Survey reveals that a lack of access to skills was the most significant barrier to innovation among these businesses.

The ACOLA project team commissioned Swinburne University of Technology to undertake a statistical analysis of the factors associated with innovation performance

among Australian businesses. The analysis confirms that different types of skills are more important for different types of innovation. Science, technology, engineering and mathematics (STEM) skills are more strongly associated with innovation in products and processes, while business skills are associated with process, organisational and marketing innovation.

Innovation policy

Innovation thinking in policy has evolved from 'first generation' (linear) approaches, to 'second generation' (systems) approaches, to third generation (ecological) approaches. Knowledge for innovation can come from a range of sources. Contemporary research and debate on the future of work, work skills and sources of innovation highlight the growing importance of higher-order integrative skills.

Innovation, in third generation policy frameworks, requires people with sets of skills that integrate, and may go beyond, STEM. Organisations need teams that maximise diversity and creativity, supported by their connections to larger innovation 'ecosystems'. Organisations do not need to have all of the skills and competencies to initiate and sustain innovation. Rather, they need to work cooperatively and in competition, developing and even sharing capabilities.

Lessons from innovative organisations

The ACOLA report includes findings from interviews with 19 Australian organisations which are independently recognised as highly innovative. All of the organisations use people and teams with a mix of skills, and draw on external skills. They invest in finding and developing the right candidates. Attitude, cultural fit and emotional intelligence or 'cleverness' are important skills.

Different skills are required at various stages in the innovation cycle, so skills mixing in individuals, in teams and across organisations is important for innovation. Innovative organisations value external ideas and viewpoints and cooperate with other organisations. Networks, partnerships and clusters help provide the skills needed for innovation.

There is a transition from tackling technical challenges at the initial stages of innovation development to a strong focus on understanding the value of innovations from the customer perspective. The important consideration is how innovations in products, services and processes will add value that customers are willing to pay for.

Many of the profiled organisations have a strong track record of 'holism' in their approaches to managing staff. This often includes developing employees' attitudes and supporting activities beyond formal education, driven by the knowledge that technical skills are necessary but not sufficient for optimum contributions. These firms foster the development of individual, team and life skills.

Improve Australia's focus on technical and non-technical skills mixing

Governments cannot rely on traditional policy instruments to create innovation ecosystems. They must assume a broader role as facilitators, connectors and enablers of system-level collaborations. A government's primary role should be to facilitate collaboration and

cooperation; this will provide conditions and support to encourage enterprise and education, resulting in a mix and use of skills beyond organisational and sectoral boundaries.

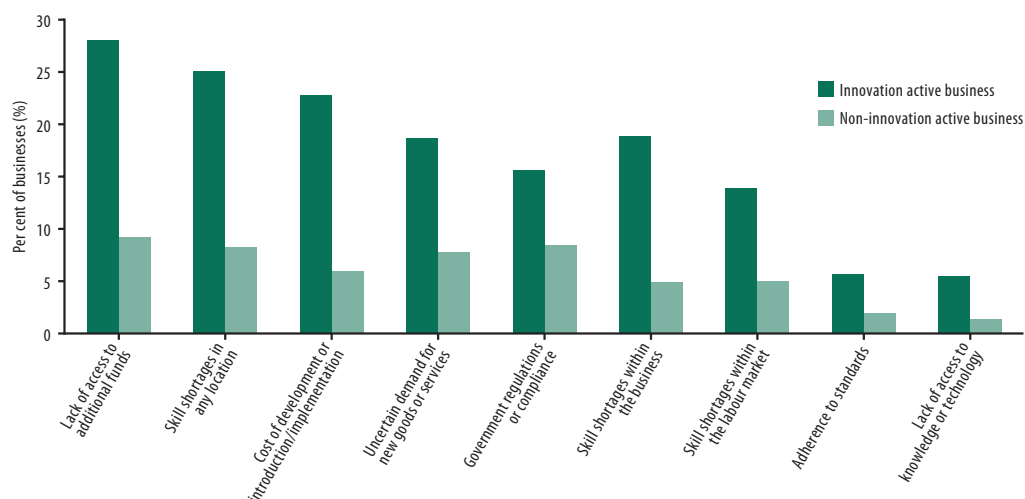
Highly innovative organisations overcome significant barriers to innovation through strengthening management and leadership capabilities. Many Australian business organisations do not have sufficient managerial talent required to meet critical innovation challenges.

The consistent finding, with challenging implications for enterprise, education and government, is the potential to broaden yet complement the current policy focus on science and technology, enabling a more holistic approach to tackling Australia's innovation challenges that teams humanities, arts and social sciences (HASS)-based skills with science, technology, engineering and mathematics (STEM)-based skills.

Conclusion

Supporting Australia's enterprise innovation will require steps that include:

1. more effectively transforming innovation inputs, such as investments in human capital and research, into knowledge and technology innovation outputs;
2. supporting and developing strong innovation ecosystems that enable access to a mix of skills;
3. employing and developing employees with broad knowledge bases and strong integrative skills (beyond a single discipline);
4. sophisticated recruitment and retention practices, internal training and development, and strong cultures and engagement;
5. strengthening management and leadership capabilities;
6. encouraging deeper collaboration across enterprise boundaries, including integrating Australian organisations into global value chains; and
7. investment in innovation ecosystems in specific industries and regions.



Barriers to innovation: innovative active versus non-innovation active businesses, 2013–14. (Source: Australian Bureau of Statistics (2016) *Selected Characteristics of Australian Business, 2013–14*, cat. no. 8167.0. Australian Bureau of Statistics, Canberra, <www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8167.02013-14?OpenDocument>)

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