**Capacity of Australian Companies to Address and Adopt New Technologies**

*This paper has been ‘written’ in the form of a series of propositions, supported by material and references largely abstracted direct from appropriate authoritative sources.*

1. The ability of Australian companies to recognise and exploit opportunities (and address risks) arising from new technology is largely determined by the quality of the company management and their capability and experience with successful innovation. The evidence is that Australian companies do not have a high performance in this regard.

“It is increasingly recognised that management capability in businesses is critical for innovation and to creating long-term economic growth.[[1]](#footnote-1) Although many innovating Australian organisations use ideas and technologies developed elsewhere, innovation occurs because managers of organisations (CEOs, directors, operations managers, owner/operators etc.) make internal strategic decisions to mobilise resources, capabilities and creativity to make it happen.[[2]](#footnote-2) Not surprisingly then, innovative, productive, networked businesses tend to be characterised by higher quality, more educated management.[[3]](#footnote-3) Innovative Australian businesses were more than twice as likely to use business and project management and marketing skills than non-innovators, and also three to five times more likely to report skill shortages in these areas…

Organisational innovation, with or without technological innovation, is a driver of MFP improvements[[4]](#footnote-4), and management capability and organisational or business model innovation can explain large differences in productivity between businesses and countries.[[5]](#footnote-5) To achieve maximum productivity and profitability it is therefore important that a business’s innovation strategy, business model and culture are aligned.[[6]](#footnote-6) The transition to *e*commerce and *m*commerce is a good example of the power of business model innovation. Innovative businesses are now around twice as likely to engage in the new business models of *e*commerce as non-innovators. Total internet income for innovation active businesses was $144 billion in 2010-11 compared to $44 billion for non-innovation active businesses.[[7]](#footnote-7)

…A recent survey found that Australian managers assess themselves as least capable in the areas of organisation capability and innovation.[[8]](#footnote-8) Taken with the relatively poor innovation culture of Australian businesses described in this report, creating a culture of innovation in the management of Australian businesses should lift productivity, particularly through better education of SME managers.” (*Australian Innovation System Report 2012*)

1. Innovation pursued by Australian companies, for structural, market size, and cultural reasons, is largely restricted to innovation which is new to the particular company, rather than new to the domestic, let alone international market. Australian companies, with a few exceptions are at best *fast followers*, which provides a limited capacity for engaging with new technology.

“A methodology developed through the *Innovation Metrics Framework* Report[[9]](#footnote-9)55 has been used to construct composite indicators on how Australian businesses innovate… domestic modification of innovations already introduced elsewhere in the world is by far the most common way Australian firms innovate.[[10]](#footnote-10) These results are consistent with earlier findings that Australian firms have long been technology integrators, modifiers and adopters, able to combine other people ideas to generate impact.[[11]](#footnote-11)

… The data also shows a significant difference between SMEs and large firms. Large firms are more than twice as likely to modify innovations already available on international markets and then sell them on to international markets. Large firms are also up to five times more likely to introduce innovations new to the domestic markets than SMEs. This data suggests an important role for large firms in both bringing innovations developed internationally into the domestic market and also in developing solutions for their sector.

Australia has extremely low proportions of ‘*New to the market international innovators*’ even for large businesses (1.5%) which generally increase the proportions of innovators across all modes. Most other OECD countries appear much more likely to develop innovations that are new to international markets than Australia…

The high proportions of modifiers of existing innovations suggests that achieving and maintaining high firm absorptive capacity is vital to the function of the Australian innovation system. If the majority of Australian firms’ innovations are based on modifications of foreign innovations, then the increasing investments in R&D may be for incremental modification rather than creation of totally new goods and services.” (*Australian Innovation System Report 2011*)

1. The innovative capacity of Australian companies is low by comparison with OECD competitors. The focus on a small number of high performing companies has served to both emphasise and conceal the extent to which Australian company innovation is *ad* *hoc,* based on particular individuals and circumstances, rather than **systematic** across companies and industries. This has left Australian companies, apart from those with effective global connections, poorly equipped to comprehend and engage with new technology.

“A business’ culture plays an important role in its decision to invest in innovation and therefore matters for productivity. To a large extent culture is the culmination of business management of human resources, business model design, knowledge management and strategies for absorptive capacity, accounting and measurement management, industrial relationships and leadership.[[12]](#footnote-12) Without leadership, or strategic intent towards innovation, businesses soon become uncompetitive. An innovation culture is associated with a combination of diverse factors such as effective collaboration, openness to new ideas, innovation strategy and embracing and managing technical or commercial risk.[[13]](#footnote-13)

Booz & Company undertook a study of the Global Innovation 1000 companies, and found that 44% of businesses had a highly aligned innovation strategy and innovation culture, resulting in higher performance indicators, such as gross profit and enterprise value[[14]](#footnote-14)… By adapting the Booz & Co. methodology to measure the level of innovative culture in Australian businesses, this report shows a representation of four main modes associated with innovation culture in Australia:

* Most Australian businesses (44%) have an innovation culture that is *ad hoc*. These businesses collaborate, are open to new ideas, consider their consumer needs when implementing innovation but only do this in a reactive way. The limitation in this approach to innovation is that it may depend on specific individuals or may fail to anticipate or learn from future challenges or opportunities, a key aspect of the most resilient entrepreneurs.[[15]](#footnote-15)
* The second most common mode (at 32%) is of businesses that appear to lack an innovation culture or innovation strategy altogether. A larger proportion of Australian SMEs fit into this category. The Booz & Co. study found that a similar proportion (~27%) of the international businesses studied was in this category. Large businesses are much less likely to be part of this category (19%).
* A small percentage (6%) of Australian businesses had innovation as part of their strategy but undertook no innovation.
* A moderate percentage (18%) of Australian businesses has a high alignment between innovation strategy and innovation culture. Large businesses are much more likely to be part of this latter category (31%).” (*Australian Innovation System Report, 2012)*

“These findings are reflected in a 2013 Australian survey, which survey lists ‘corporate productivity in a challenging growth environment’, strategy and execution as the top issues for Chairmen and CEOs of ASX Top 200 companies in the next 24 months.[[16]](#footnote-16) The following statements were made in relation to innovation:

* ‘While 77% of Chairs and 72% of CEOs said their organisations were innovative, only 34% of Chairs and 46% of CEOs said that a significant proportion of their revenue was derived from recent innovation. Indeed, while companies saw themselves as innovative, the interviews highlighted several concerns that Australia had not been innovative as a nation.’
* ‘Both Chairs and CEOs raised concerns around innovation, such as a lack of scale, low levels of venture capital funding and changes to government tax rules.’
* ‘But what surprised us was the view that lack of innovation may be cultural. There were several references to tall poppy syndrome and cultural cringe around innovation. Many Chairs and CEOs felt that while Australian companies are good at adapting and may be incremental innovators, they have not generally been breakthrough innovators’.”[[17]](#footnote-17)

1. It is common to hear that a lack of directors with appropriate scientific and technical knowledge is a significant factor in companies’ inability to address issues and opportunities raised by new technology. The evidence, at least at a primary level, does not support this claim.

“Detailed research at the national and international level revealed a great deal of information about typical board size and composition, but almost no data on STI/STEM capacity – itself a telling finding.

Hence a review was conducted of the annual reports of more than eighty major Australian company (top 100 and beyond). This provided qualification details of more than 300 directors, which show:

* 32% of top 100 company directors with a STEM qualification in 2002, but no females;
* 36% of top 100 company directors with a STEM qualification in 2012, including 8% females;
* 21% of other company directors with a STEM qualification in 2012 , including 10% females;
* 21 of the 41 Top 100 STEM directors and 13 of the 22 Various STEM directors in 2012 had engineering qualifications, a combined average of 54%.

It was therefore concluded that STEM participation in Australia company boards is a fair reflection of their ability to contribute, and that it is apparently increasing. There is generally a higher level of participation on the boards of large companies, but there is no apparent significant correlation with industry sector. In addition, the majority of directors with STEM qualifications also had formal training in management or a related discipline.”[[18]](#footnote-18)

However a caution:

“Another issue of concern is that shareholder requirements are creating an excessive *focus on short-term* results with negative impacts for ‘strategy, fundamentals and conventional approaches to long-term value creation.’ A recent Australian review of this issue notes that consequences can include ‘missed opportunities to create enduring value’, ‘under-investment in value-creating opportunities such as research and development’ and ‘the rejection of long-term projects … including high-tech projects’ with broader economic and societal implications being a reduction in innovative capacity and ‘distraction’ from environmental and corporate social responsibility issues.[[19]](#footnote-19)”

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5. Bloom N, Genakos C, Sadun R & van Reenen J (2012) *Management practices across firms and countries,* National Bureau of Economic Research Working Papers, No. 17850. [↑](#footnote-ref-5)
6. Jaruzelski B, Loehr J & Holman R (2011) *Why Culture is Key: The Global Innovation 1000.* Booz & Co. Issue 65, Winter. [↑](#footnote-ref-6)
7. ABS (2012) *Selected Characteristics of Australian Business,* 2010-11, cat.no.8167.0. [↑](#footnote-ref-7)
8. Australian Institute of Management (2012) *2012 Australian Management Capability Index*, http://www.aim.com.au/resources/AIM-AMCI.pdf, last accessed 30 August 2012. [↑](#footnote-ref-8)
9. Australian Government (2010) *Innovation Metrics Framework Report*, Department of Innovation, Industry, Science and Research, Canberra, Australia. [↑](#footnote-ref-9)
10. See Chart 1.8, p.22 *Australian Innovation System Report 2011*; domestic modifiers make up 25% of innovators, compared with 5% of new to market domestic innovators and 1.5% new to market international innovators. [↑](#footnote-ref-10)
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