World Economic Forum *Global Information Technology Report 2016*: summary of Australian results

July 2016

The World Economic Forum's (WEF) *Global Information Technology Report 2016*[1] provides an assessment of the ability of businesses and the wider community to utilise information and communications technologies (ICT) in support of growth, competitiveness and development. It then ranks their ability across 143 countries for 2016. The Report is based on research conducted by the WEF and its network of Partner Institutes. Ai Group is the WEF's Partner Institute in Australia.

Australia's digital competitiveness: key findings

In this year's Report, Australia's ranking for 'digital competitiveness' slipped to 18th place in 2016, from 16th place in 2015. This reversed the small improvement seen in 2015 to 16th place, from 18th place in 2014. It is well over a decade since Australia has been in the top 10 of nations for digital competitiveness; Australia achieved its best ever ranking of 9th place, in 2004 (see Chart 1).

Australia's ranking has tended to trend lower over the past decade, despite a slow improvement in our national 'networked readiness index' (NRI) score, from a low of 5.1 points in 2010 and 2011, rising to 5.5 points in 2015 and 2016 (see Chart 1). This suggests that Australia has made small improvements in digital readiness over the past five years but that this has not been enough to keep up with global ICT developments. Many other countries have leapfrogged ahead of Australia with regard to their ICT readiness and moved up these rankings as a result.

This year's Report highlights that, despite a number of existing measures and the progressive rollout of the National Broadband Network, there is a clear urgent need for Australia to do more to improve its digital competitiveness. In particular, more Australian businesses must embrace ICT and improve their ICT capabilities, in order to innovate and compete.

The Report also highlights the need for effective national policies that encourage business access to (and uptake of) ICT as well as promoting Science, Technology, Engineering and Mathematics (STEM) skills, in order improve outcomes from new ICT technologies in business.[2]

In 2016, improvements in Australia's ICT-related business environment (including business innovation and the regulatory environment) were outweighed by declines in the state of our ICT readiness, especially with regard to Australia's relatively expensive fixed broadband. While individual ICT usage is high in Australia by global standards, there is significant room for improvement in the level of business and government investment, adoption and use of ICT.

[1] The WEF *Global Information Technology Report 2016* is available from www.weforum.org/reports
[2] See Ai Group 2015, *Progressing STEM skills in Australia*. Available from http://cdn.aigroup.com.au/Reports/2015/14571_STEM_Skills_Report_Final_-.pdf

Chart 1: Australia's Networked Readiness Index (NRI), score and ranking

Global best practice in digital competitiveness

The top seven countries (dominated by Singapore, northern European countries and the US, see Table 1) are performing significantly better than the rest of the world in terms of digital competitiveness in 2016. These countries are embracing digital technologies, are already utilising them for their economic benefit, and have key business sectors that are keenly focussed on digital technologies as central elements of their operations.

The 2016 Report is firmly rooted in the context of the 'fourth industrial revolution' that was heralded by the WEF earlier this year. An overarching theme in the Report is a global call for businesses and governments to more actively embrace digital technologies and innovation. A key finding in 2016 is that even in the better-performing countries, many businesses and governments are still missing out on the potential benefits - and may be left behind - as the global technological landscape evolves rapidly.

Table 1: WEF Networked Readiness Index (NRI) rankings 2016: top 20

Rank	Country	Rank	Country
1	Singapore	11	Denmark
2	Finland	12	Hong Kong
3	Sweden	13	South Korea
4	Norway	14	Canada
5	United States	15	Germany
6	Netherlands	16	Iceland
7	Switzerland	17	New Zealand
8	United Kingdom	**18**	**Australia**
9	Luxembourg	19	Taiwan
10	Japan	20	Austria

2016 Report detail: Australia's digital competitiveness

In 2016, Australia generally performed above the WEF average for high-income countries in each of the four indicator categories that contribute to the Networked Readiness Index (NRI) score (see Table 2). These four indicator categories are:

(A) environment (that is, the business and regulatory environment);

(B) readiness;

(C) usage; and

(D) impact.

These four categories are in turn constructed from 53 individual indicators that are calculated from a range of international data and information sources.

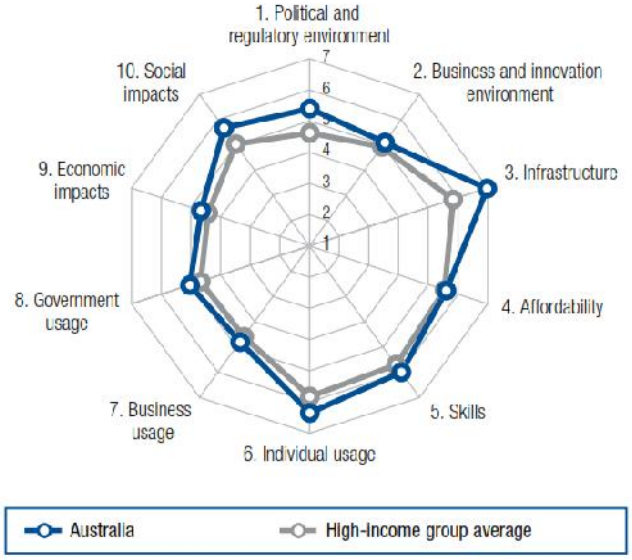
Australia's rankings have generally been falling in the **Environment**, **Usage** and **Impact** categories over the last decade. The **Readiness** indicator had been improving, however in 2016 Australia's ranking on this measure appears to be deteriorating also, as other countries perform relatively better and move up the ranks. In the 2016 Report, Australia was ranked:

- 16th place in the **Environment** sub-index, up from 17th place in 2015 and down from a peak of 8th place in 2007. This indicator gauges the 'friendliness' of a country's market conditions and regulatory framework in supporting ICT-related entrepreneurship, innovation and development.
- 10th place in the **Readiness** sub-index, down from a high of 7th place in 2015. This decline was mainly driven by a deterioration in digital affordability. This indicator measures the extent to which a country has in place the infrastructure and other crucial factors such as affordability and skills, to support the adoption of ICT across businesses and the wider community.
- 22nd place in the **Usage** sub-index, down from 20th place in 2015 and well down from a peak of 11th place in 2008. This indicator assesses the extent of ICT adoption by each country's main user groups including government, businesses, and individuals. In 2016, Australia's government and business usage scores lagged behind other advanced countries, causing the overall ranking for Usage to slip, despite relatively strong usage among individuals.
- 21st place in the **Impact** sub-index, down from 19th place in 2015 and further down from the highest rank of 16th place in 2012.[3] This indicator measures the broad economic and social impacts accruing from ICT in each country. The main reason for the deterioration in Australia's rank in 2016 was the relatively small positive economic impacts from ICT identified in Australia. This reflects, in part, the lower usage of ICT among Australian business and government as opposed to individuals.

[3] The ICT 'impact' sub-index was introduced in 2012 and backdated, based on data that was previously embedded in other sub-indexes.

Table 2: Australia's networked readiness index (NRI) in 2016: sub-indexes

	Rank (out of 139)	Value (1–7)
Networked Readiness Index	**18**	**5.5**
Networked Readiness Index 2015 (out of 143)	16	5.5
Networked Readiness Index 2014 (out of 148)	18	5.4
Networked Readiness Index 2013 (out of 144)	18	5.3
A. Environment subindex	**16**	**5.2**
1st pillar: Political and regulatory environment	13	5.4
2nd pillar: Business and innovation environment	23	5.1
B. Readiness subindex	**10**	**6.2**
3rd pillar: Infrastructure	7	7.0
4th pillar: Affordability	57	5.6
5th pillar: Skills	13	6.0
C. Usage subindex	**22**	**5.4**
6th pillar: Individual usage	13	6.3
7th pillar: Business usage	24	4.8
8th pillar: Government usage	22	5.0
D. Impact subindex	**21**	**5.2**
9th pillar: Economic impacts	23	4.7
10th pillar: Social impacts	9	5.7



Within the **Environment** sub-index, Australia's global ranking for the **political and regulatory environment**, which measures the extent to which a country's political and regulatory environments facilitate ICT penetration and the development of ICT-related business activities, climbed to 13th place in 2016 from 15th place in 2015. However, this is still significantly lower than the 7th place ranking achieved in 2011. In particular:

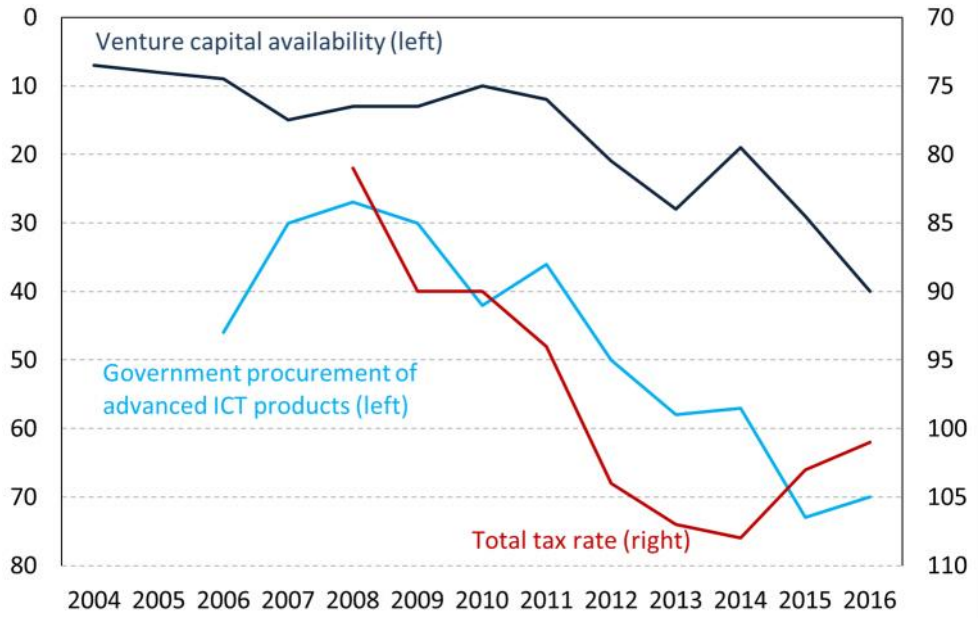
- Australia's relative performance on **laws relating to ICT** (e.g. electronic commerce, digital signatures and consumer protection) deteriorated again from to 29th place in 2016, from 28th place in 2015 and a long way from 3rd place achieved in 2004.
- Australia's relative performance on **intellectual property protection** (including anti-counterfeiting measures) improved to 13th place in 2016 from 17th place in 2015, but is still well below its peak of 10th place in 2009.

Also within the **Environment** sub-index, Australia's rank for **business and innovation environment** is unchanged at 23rd place in 2016. This pillar gauges the extent to which the business environment supports entrepreneurship and innovation. It takes into account for example, measures of red tape, the ease of starting a business and the complexity of taxation. In the 2016 Report, Australia is ranked:

- 101st place on total tax rate, down from 81st place in 2008 (see Chart 2). This indicator measures the sum of a country's taxes (including company tax, labour tax, property tax and GST) as a percentage of total commercial profits. Although total tax as a percentage of profits declined over these years, governments in other countries have done more in terms of lowering tax rates to encourage ICT adoption and investment. Relative to most other countries, total tax paid by businesses in Australia is uncompetitive.

- 40th place for venture capital availability, a significant drop from 29th place in 2015. This indicates that finance for entrepreneurs with innovative but risky projects is relatively harder to obtain in Australia than elsewhere. This in part reflects the subdued investment environment in Australia currently, as well as a declining trend in Australia's investment appetite for ICT, with this year's ranking a long way down from Australia's peak ranking for this indicator of 7th place in 2004.
- 70th place for government procurement of advanced technology products. This is up from 73rd place in 2015 but far lower than Australia's peak of 27th place in 2008. Investment procedures by government remains unconducive to encouraging ICT-related innovation, relative to those in other countries.
- On other business and innovation environment indicators, Australia maintains a relatively high rank for the number of days to start a business, coming in at 6th (down from 4th in 2015); 5th place for software piracy measures (same as in 2015); 6th place for our tertiary education enrolment rate (same as in 2015) and 9th place for the intensity of local business competition (8th in 2015).

Chart 2: Australia's ranking on business and innovation environment measures: total tax rate, venture capital availability and government procurement of ICT*



* Ranking for total tax rate available from 2008, government procurement of advanced ICT products available from 2006.

Australia's recent positive performance in the **Readiness** sub-index reversed in 2016, moving down to 10th place from 7th place in 2015). The recent slide in global rankings reveals some gaps in Australia's skills and the relative lack of affordability of ICT in Australia. Within the affordability pillar in 2016:

- Australia's **mobile cellular affordability** slipped to 19th place from 14th in 2015. This remains a significant improvement from Australia's low of 128th place in 2012 (see Chart 3).
- Australia's **fixed broadband internet affordability** reversed the previous year's gains, sliding to 100th place in the global rankings, from 76th place in 2015. It remains well below a peak ranking on this indicator for Australia of 10th place in 2010.

In terms of the **skills** available to utilise ICT, Australia was ranked 13th place in 2016, up from 17th place in 2015, and coming closer to the peak of 11th place achieved in 2012. This pillar is based on measures such as: the overall quality of the education system; mathematics and science education; the enrolment rate in secondary education; and adult literacy rates. While not in the global top 10 as yet, Australia's ICT-related skills rankings have improved and this is encouraging. In particular, in 2016:

- Australia's relative **quality of education system** ranking improved to 13th place, from 19th place in 2015), but remains down from its peak of 7th place in 2005 (see Chart 4).
- Australia's ranking on **maths and science education** improved to 27th place, up from 38th place in 2015, but lower than its peak of 9th place in 2004. The absolute score for Australia for this key indicator declined over this period, as well as the relative ranking, suggesting the absolute quality of Australia's maths and science education may have worsened.

Chart 3: Australia's ranking on cost of broadband and mobile

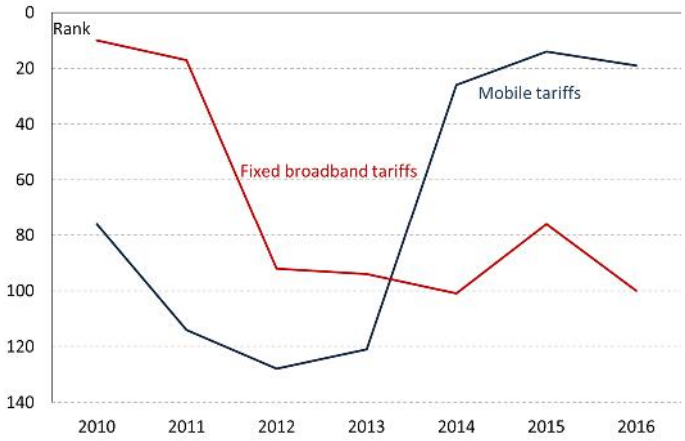
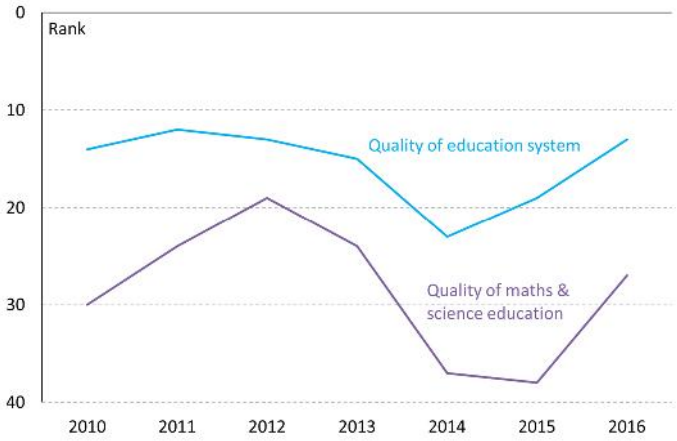


Chart 4: Australia's ranking on quality of education system, maths & science education



The **Usage** sub-index assesses the extent of ICT adoption by government, businesses, and individuals, including their capacity to use, and actual use of, ICT in their day-to-day activities. In this category, Australia dropped to 22nd place in 2016, down from 20th place in 2015, and well below its best rank of 11th place in 2008. Within this category in 2016:

- Australia's ranking on **individual usage** of ICT improved to 13th place, from 15th place in 2015. This indicates that more Australian individuals have access to and are using ICT products and services (e.g. mobile phones, fixed and mobile broadband subscriptions, personal computer ownership and the use of social networks) compared to recent years and compared to other countries.
- Australia's ranking in **business usage** remained at 24th place in 2016, well down from a peak of 3rd place in 2004. This suggests that the 'early adopter' global advantage that was gained by some Australian businesses over a decade ago is now gone.
- More positively, Australian businesses inched higher to 25th place, from 27th place in 2015, in terms of their **capacity to innovate**.
- Australia also improved its ranking for **extent of staff training**, climbing to 24th place from 30th place in 2015. The WEF interprets this indicator as a proxy for the capacity of management and staff to innovate. While the improvement is encouraging, these results suggest Australian businesses are lagging behind their global peers on skills and innovation, and have done so for some time. Australian businesses need to increase the integration of ICTs into their day to day operating environment and better develop staff skills in order to utilise new technologies.
- Australia's ranking for **firm level technology absorption**, improved to 22nd place from 23rd place in 2015, but remained down from its high of 15th place in 2013. This indicator measures business uptake of new ICT into their operations. It highlights that Australian businesses could do more to adopt new technologies and embed these into their operations.
- Australia ranks 25th place for **business-to-consumer internet use**, well down on 2015's ranking of 16th place. Local businesses had previously been relatively competitive in using the internet to sell their goods and services to consumers, however Australia's global competitiveness in this area looks to be waning.
- Australia's ranked 22nd for **government usage,** up from 23rd place in 2015, but significantly lower than the high of 5th place in 2010. This indicates that Australia's governments (federal and state) are underutilising ICT, compared to their global peers. They are potentially becoming less supportive of promoting the use of ICT more widely.
- on the **importance of ICT to government vision**, Australia's ranking has slipped to 47th, from 40th in 2015. This adds further weight to the view that Australia's governments should be better focussed on encouraging ICT as a means of enhancing Australia's growth prospects.

Chart 5: Australia's ranking on individual, business and government use of ICT

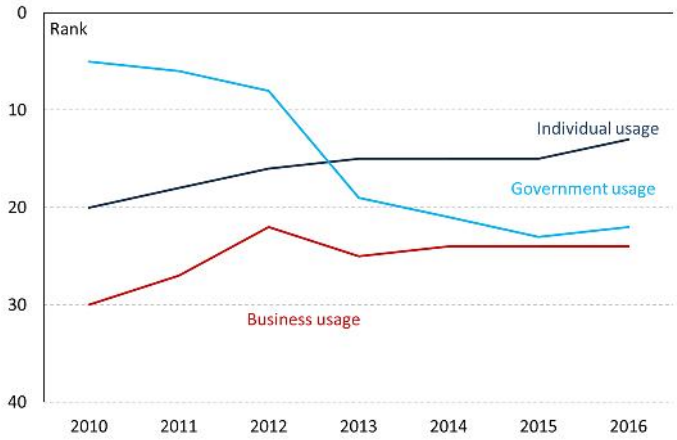
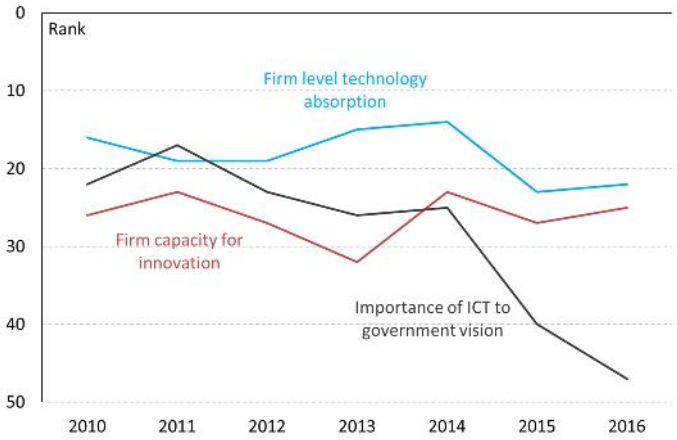


Chart 6: Australia's ranking on business innovation, absorption of ICT and government vision



Australia's ranking on the **Impact** sub-index, which measures the broad economic and social benefits accruing from ICT, slipped to 21st place in 2016, from 19th place in 2015. Within this sub-index in 2016:

- Australia ranked 23rd place in **economic impacts,** up from 24th place in 2015). This highlights that Australia could be doing more to harness the economic value-adding ability of new technologies. Specifically, for the indicator of **impact of ICT on business models**, Australian businesses lag behind in implementing and leveraging new technologies as part of their core operations, ranking at 41st.
- Australia's ranking for **social impacts** improved, climbing to 9th place from 14th place in 2015. This highlights that Australia is making better use of ICT for basic social services (including government social services) and for education services than many of its peers. However, on the related indicator of **ICT use and government efficiency,** Australia ranks relatively poorly at 42nd place, highlighting that Australia's various federal and state public services could make better use of ICT to enhance their efficiency.

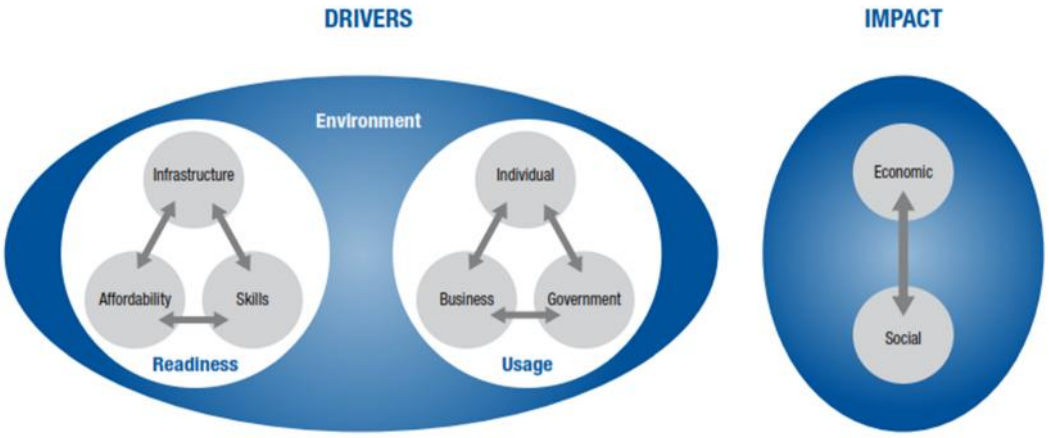
About the WEF *Global Information Technology Report 2016*

The *Global Information Technology Report* is published annually by the World Economic Forum within the framework of the Global Competitiveness and Benchmarking Network and the Industry Partnership Programme for Information and Communication Technologies.

Research for the Reports is conducted by the WEF and its network of 169 Partner Institutes, which help administer the annual Executive Opinion Survey around the world. The Survey is used in conjunction with many other data sources in the production of this Report. Ai Group is the WEF's Partner Institute in Australia. The full list of Partner Institutes is available at http://reports.weforum.org/global-competitiveness-report-2015-2016/partnership-institutes/

Further information about the WEF and the *Global Information Technology Report 2016* is available at: https://www.weforum.org/reports/the-global-information-technology-report-2016

Chart 7: The WEF Networked Readiness Index (NRI) framework



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