

# Contractors Deliver – Innovation Levels on the Rise

Innovation Analyst, Dr Karen Manley from the CRC for Construction Innovation reviews new data from the Australian Bureau of Statistics (ABS) about rates of construction innovation. The numbers show increasing innovation levels and reveal where the most innovative contractors are to be found.

The latest Australian innovation statistics were released by the ABS a few weeks ago. The statistics cover all Australian businesses which employ more than five people. This article focuses on those businesses which were innovative in the reference periods. 'Innovation' is defined as the use of new or significantly improved goods, services, or processes. The data discussed in this article gives contractors a useful insight into the strengths and weaknesses of the industry in terms of innovation performance.

## GROWTH IN CONTRACTOR INNOVATION KEEPS PACE WITH OTHER INDUSTRIES

Chart 1 shows that in 2002-2003, 27.2% of contractors were undertaking innovation, while in 2004-2005 this figure had risen to 30.8%. This increase of 3.6 percentage points over a two year period is roughly equal to the average growth over the same period for businesses across all Australian industries, which was 3.9 percentage points.

	2002-2003	2004-2005	Increase in percentage points
Goods and services innovation			
All industries	13.4%	19.4%	6.0
Construction industry	7.8%	16.5%	8.7
Operational process innovation			
All industries	18.9%	21.6%	2.7
Construction industry	17.3%	22.0%	4.7
Managerial process innovation			
All industries	18.4%	24.9%	6.5
Construction industry	19.3%	26.2%	6.9
Any innovation			
All industries	29.6%	33.5%	3.9
Construction industry	27.2%	30.8%	3.6

Chart 1 Percentage of businesses innovating, by innovation type, by industry, 2002-2003 and 2004-2005

Other data on the types of innovation undertaken (ABS 8158.0, 2006), shows that contractors put most effort into innovation in managerial and operational processes, with less effort going into developing new goods and services. This is a logical emphasis for contractors given that efficiency in the delivery of constructed assets is their key concern. Data on innovation by consultants and suppliers serving the construction industry would no doubt show the opposite emphasis, with their focus being new goods

and services. Despite contractor's greater emphasis on process innovation, their involvement in goods and services innovation is growing rapidly.

## LOOKING AT GROWTH IN DIFFERENT TYPES OF INNOVATION

Chart 1 shows that between 2002-2003 and 2004-2005 the incidence of innovation in goods and services in the construction industry\* more than doubled, increasing 8.7 percentage points from 7.8% of contractors innovating to 16.5% of contractors innovating. The average increase for all Australian industries was lower at 6 percentage points. During the same period, contractor innovation in operational processes increased 4.7 percentage points and only 2.7 percentage points across all industries. The construction industry also showed marginally higher growth for innovation in managerial processes at 6.9 percentage points compared to the all-industries average of 6.5 percentage points. Despite superior growth in individual innovation categories, contractors have slightly lower overall growth because many more contractors undertook multiple innovation types in the latter period, inflating growth rates by categories.

It is interesting to review which contractors are driving this growth. Are they in Victoria or New South Wales? Are they large or small contractors?

## HOW ARE CONTRACTORS PERFORMING NATIONALLY?

The rate of contractor innovation varies markedly across the states and territories, as shown in Chart 2.



Chart 2: Percentage of construction businesses innovating by state and territory, 2004-2005\*

Thanks to Greg Keane for assistance in interpreting this chart. Also, note that the results for the four smallest population centres (ACT, NT, TAS and SA) have high relative standard errors of between 25 and 50%. However, even assuming the highest level of error, ACT performance is 25% higher than that of NSW.

Contractors can take some responsibility for the outcomes in this chart, as their innovation performance has been critically influenced by their internal culture and the predisposition of owners and managers toward innovation. However, innovation performance is also influenced by the type of projects required by clients and the capability of clients. More complex projects and more capable clients lead to higher innovation opportunities. This is reflected in Chart 2. Despite the fact that ACT and NT represent very small markets, during the reference period they hosted a number of landmark projects such as the Alice to Darwin Railway. These projects involve new challenges that create innovation opportunities. Furthermore, interstate expertise is likely to have been involved with these projects, influencing the behaviour of local subcontractors.

Moving to the other end of the chart, Tasmania's performance is likely to have been dominated by its small local market and associated absence of innovation opportunities. The opposite effect appears not to dominate in NSW which also has poor performance. The result may reflect their large population of contractors, including a large proportion of Australia's smaller contractors. It is shown later in this article that smaller businesses are less likely to innovate, so that the industry composition in NSW may drag down its overall innovation rate. The NSW result may also reflect the dominance of relatively standard construction projects and/or relatively low levels of technical competency within client organisations; both of which would constrain innovation opportunities.

The strong result for SA could indicate the existence of competent clients, or landmark projects, particularly projects emphasising positive environmental outcomes, such as the Parafield Stormwater Harvesting Initiative. However, there is a broader influence as South Australia has the highest rate of innovation in the country, when accounting for businesses across all industries. This may suggest that government initiatives such as the Centre for Innovation and Upskill SA are having a positive effect.

Contractors in Vic, Qld and WA share a similar propensity to innovate to those in SA. For Vic, the result is likely to reflect building construction associated with the showcase Docklands development. For Qld, likely drivers include rapid population growth, infrastructure investment, the resources boom and high levels of client competency within government agencies. For WA, the resources boom and an overheated economy are obvious opportunities for contractor innovation. Together with this, there is some evidence that businesspeople in WA have a strong desire to 'do it their way' and to avoid duplicating the behaviour of their peers in the eastern states, which can drive innovation. Indeed this cultural desire to be free of tradition has been argued to exist in WA, Qld and NT, supporting their strong performance in Chart 2.

## DOES SIZE MATTER?

The data show that contractor innovation rates vary according to how many employees they have, as shown in Chart 3.



Chart 3: Percentage of businesses innovating, by industry, by employment size, 2004 and 2005.

For both the construction industry and all-industries, the data show that innovation rates increase with number of employees. This is due to larger businesses having more resources available for innovation, including employee ideas. The data also show that large contractors, employing more than 100 people, are more innovative than the average for large businesses across the whole Australian economy. This is quite an achievement and suggests that large businesses can play a useful role in pulling innovation through the supply chain, by helping to upskill their subcontractors.

In terms of small businesses, with between 5 and 19 employees, Chart 3 shows that construction businesses have a similar innovation rate to the average performance of their peers in all industries. The most marked difference in innovation rates between contractors and the all-industry average is for middle-sized businesses, which employ between 20 and 99 people. For this size range, contractor's performance is markedly less than the Australian average. This finding suggests that policy makers should focus their attention on assisting medium-sized contractors to improve their innovation performance.

Medium-sized businesses lack both the intimacy and flexibility of smaller businesses and the extensive resource-base of larger businesses. Both can make effective relationship-management more difficult. This problem appears to have had a particularly significant impact on medium-sized businesses in the construction industry, where the quality of relationships is crucial, given the demands of temporary, multiple-stakeholder projects.

Despite the ABS statistics showing some positive construction innovation outcomes, the inter-industry ranking of contractors remains poor, as shown in Chart 4.

Construction's poor performance in this chart is reflected in other ABS data which shows the industry is also ranked 3rd last across all Australian industries in terms of the proportion of expenditure

on innovation, and 2nd last in terms of the proportion of income generated from innovation (ABS 8158.0, 2006). Both findings reflect the industry's relatively low level of innovation activity in goods and services. The process innovation which dominates the construction industry is required to improve project performance, while happily for contractors it may cost less to fund than goods and services innovation. It is also hard to attribute income to process innovation. Thus it would appear that the expenditure and income data is less concerning than the overall incidence data in Chart 4.

The relative performance of the construction industry in terms of different types of innovation-related expenditure can also be reviewed. Examination of ABS data reveals a similarly low ranking in terms of intellectual property, training and marketing expenditure. However, construction's performance for machinery and equipment expenditure is better, with a middle ranking across all industries (ABS 8158.0, 2006).

In summary, the latest ABS data indicates the strengths and weaknesses of Australian contractors in terms of their innovation performance. In recognition of the importance of the construction industry to national prosperity, the Commonwealth Government established the Cooperative Research Centre (CRC) for Construction Innovation in 2001. The BRITE Project of the CRC for Construction

Innovation, and other Construction Innovation projects, are actively engaged in assisting medium-sized contractors and other construction industry participants to achieve their innovation potential. Visit [www.brite.crci.info](http://www.brite.crci.info) for assistance in improving your innovation performance.

The CRC for Construction Innovation is a national collaboration of 21 industry, government and research partners focussed on creating technologies, tools and processes for the property, design, construction and facility management sectors. 

## Notes

\* The construction industry is defined by the ABS as main and trade contractors in the civil and building sectors. Consultants and construction suppliers are allocated to other industries.

Chart 4: Australian industries by percentage of businesses innovating, 2004-2005

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