

Construction Innovation Potential

INNOVATION ANALYST, KAREN MANLEY*, REVIEWS AUSTRALIAN BUREAU OF STATISTICS (ABS) DATA ABOUT CONSTRUCTION INNOVATION, RELEASED FOR THE FIRST TIME IN A DECADE, ON 17 FEBRUARY 2005.

The ABS collected data on construction innovation in 1994 for the two years 1993-1994 (Cat. 8117.0) and then again in 2003 for the three years 2001-2003 (Cat. 8158.0). The ABS defines innovation as use of a new or significantly improved good, service, or process, by a business for the first time. It defines the construction industry as consisting of general and trade contractors only, with consultants and suppliers classified to other industries. This impacts the findings below because consultants and suppliers were recently shown to be more innovative than contractors, by the national BRITE innovation survey undertaken in 2004 by the CRC for Construction Innovation. The relative performance of the construction industry shown below is worse than it would be if consultants and suppliers were included in the definition of the industry.

Australian versus New Zealand

Comparison of the Australian and New Zealand construction industries shows that 32% of Australian construction businesses with 10 or more employees had introduced technological innovations over the three years 2001-2003, while only 24% of their New Zealand counterparts had done so. It is likely that this difference is due at least in part to Australia's larger market.

Construction versus other Australian Sectors

There is also data over the same period concerning the nature of innovation by Australian contractors employing five or more people and how that compares to other Australian industries. This shows that 31% of Australian contractors had innovation activity of some type (technical or managerial) over the period, while the comparative figure for businesses across

the Australian economy was slightly higher at 35%.

Construction innovation historically

The innovation rate of 31% for the construction industry is the lowest of all Australian industries, except for the hospitality industry, where 27% of businesses undertook innovation. The last time the

all-industries average is 1.7% of total business expenditure, while for construction, 1.2% of total expenditure is allocated to innovation.

Innovation Barriers

Many factors constrain innovation expenditure and the implementation of innovations. The survey asked innovators to share the problems they experienced:

Innovation Barriers	Construction	All-Industries
excessive economic risk perceived by the business	14%	24%
direct costs too high	30%	36%
cost or availability of finance	7%	19%
government regulations or standards	16%	28%
potential market already dominated by established businesses	16%	30%
lack of customer demand for new goods or services	11%	18%
lack of skilled staff	27%	26%
no barriers	33%	25%

ABS released construction innovation data, the construction industry had the lowest rate of innovation of all industries, with only 15% of contractors innovating between 1993-1994. The good news is that the industry has doubled its innovation effort over the eight year gap. The bad news is that its relative ranking remains largely unchanged.

Emphasis on innovation in processes

The remainder of this article concentrates on the ABS data released in February this year. This shows that most of the technological innovation by Australian contractors was in operational processes, rather than goods and services. Only 10% of the industry registered innovation in goods or services, while 17% of businesses economy-wide did so.

Innovation Spending

The construction industry spends less than most industries on innovation. The

These results show that on average, contractors experience fewer innovation problems than innovators in other industries. The incidence of each barrier as an all-industries average is greater than for contractors, except for "lack of skilled staff" which has roughly the same importance.

"Market dominance" is roughly twice as problematic to businesses economy-wide, while "finance" is nearly three times more likely to be a problem in the broader economy. Similarly, "regulation", "risk" and "customers" are both much more of a problem in other industries.

The overall picture is summed up in the "no barriers" data which shows that only 25% of innovating businesses across the economy reported no barriers to innovation, while 33% of contractors did so. Taken together, these findings suggest that the factors constraining construction innovation potential are not related to the relative severity of common innovation barriers;



Innovation Analyst, Karen Manley*, reviews Australian Bureau of Statistics (ABS) data about construction innovation, released for the first time in a decade, on 17 February 2005.

rather they may be related to a lack of innovation drivers (see next section).

The most significant barrier to innovation by contractors was "direct costs too high", experienced by 30% of innovators. This result confirms the findings of the BRITE innovation survey which showed that "cost" and "time" were the dominant obstacles to construction innovation.

Although "lack of skilled staff" was the second most significant barrier to innovation in the ABS survey, experienced by 27% of innovating contractors, this problem was more widespread in other key industries, like manufacturing, transport and hospitality.

Innovation Drivers

As might be expected, profit-related reasons drove most of the innovation across all Australian industries - including construction. This result also confirms BRITE survey findings.

Although the most common innovation drivers in construction were "improving productivity" and "reducing costs", the proportion of businesses reporting these drivers was noticeably lower compared to the "leading industries" - mining and utilities.

Proportion of innovating businesses reporting innovation driver, 2001-2003

Industry	Driver	
	Improving productivity	Reducing costs
Construction	52%	52%
Mining	70%	81%
Utilities	72%	80%

The results for mining, and electricity, gas and water utilities, provide a benchmark for contractors to aspire to. That these benchmarks have been set by other service-oriented industries, rather than the manufacturing industry, should increase contractors' identification with them.

Learning about Innovation

ABS data on sources of innovation ideas shows that the behaviour of construction innovators roughly matches that of innovators across the economy, except for "sources within parts of the wider enterprise group to which this business belongs". Contractors are between two and five times less likely to use sources of innovation ideas within their wider enter-

prise group, than businesses in other Australian industries.

It might be tempting to explain this very significant result in terms of all the sole traders in construction who, by definition, have no wider business group to communicate with. However the survey covers businesses employing five or more people, so it excludes sole traders.

The result probably has more to do with learning discontinuities. The discrete nature of production projects means that it is difficult for businesses to keep track of accumulated learnings. Indeed, the BRITE survey found that project-based learnings are often not properly integrated with on-going business processes and the ABS data reflects this.

There appear to be insufficient mechanisms to diffuse ideas from the wider business group, and/or insufficient incentives to encourage an individual business to approach the wider group. Construction ideas typically come from projects, not the wider group, but they need to be centrally stored within the group to avoid "reinventing the wheel". In any case, it would seem that there is much to gain from contractors putting more into, and getting more from, related businesses.

Contractors might even look at entering into formal collaborations, such as joint ventures and licensing agreements, to increase learning opportunities and profitability. Contractors have the highest rate of "no collaboration" (79%), compared to all Australian industries (average is 73%), except retail trade (83%).

The Final Verdict

Overall, the ABS data shows that the industry's innovation performance is reasonable compared to other industries, although it also points to opportunities for improvement. The BRITE Project of the CRC for Construction Innovation, and other Construction Innovation projects, are actively engaged in assisting contractors and other construction industry participants to achieve their innovation potential. See www.brite.crci.info and www.construction-innovation.info. ■

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