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Supporting Innovation in Regional Australia – Perceptions from Regional and Urban Innovators

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Abstract
Globally, innovation is recognised as a key pathway to productivity, sustainability and effectiveness in both the public and private sector. In order for Australia to remain internationally competitive, all areas of the economy need to be actively involved in innovation. This is especially true in regional Australia, given that regions are major contributors to national productivity.

It is critically important that innovation policy and programming are developed based on a strong evidence base. Despite this, there is a paucity of research reporting on the levels of innovation in regional Australia, and few accounts of the experiential knowledge regarding what support measures are likely to be most effective in terms of increasing innovation. This paper addresses that knowledge gap by presenting the results of an online Australian innovation survey, conducted with a sample of respondents who are familiar with the issues faced in regional Australia. This survey contrasts the track record and perceptions of innovation between urban and regional areas.

Overall, significant differences were hardly detected between the views of respondents from urban and regional areas. Nevertheless, the key themes were that innovation is well understood by regional businesses, with innovative activities mainly reported in marketing, management and operational processes. Businesses predominantly reported that they collaborated with other businesses for innovation, albeit many respondents indicating they did not feel there was a need for collaboration. The primary driver for innovation was to increase responsiveness to customer need and increase efficiency; whereas barriers were the cost of development or lacking funds. These findings suggest that support for (regional) businesses is likely to be most effective if centered on innovation-specific business planning advice and developing links and networks between businesses. Respondents also expressed a desire for government organisations, universities and economic development organisations to support and foster business innovation through improved networking and alliance building.

Keywords
Regional development, innovation policy, marketing innovation, operational innovation, goods and services innovation, product innovation.

Cover Page Footnote
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Introduction

Innovation is broadly defined by the Oxford online dictionary as a process 'by which to make change in something established, especially by introducing new methods or ideas'. Globally, innovation is recognised as a key pathway to productivity in both the public and private sector. Innovation is also useful in developing and maintaining best practice through continual improvement approaches. However, more recently, innovation has been interpreted as having wider importance and influence beyond simply economic performance, such as business growth and profitability (Baregheh, Rowley and Sambrook, 2009). It is within this much broader context that innovation is now acknowledged as a national-level priority in countless countries worldwide. In adopting this approach, Australia is no different: innovation has been recognised as a critical component in national prosperity (Cutler, 2008) through its contributions to economic growth, community development and novel solutions to environmental problems. In part, this importance is based on innovation being central to an organisation's competitive advantage (Geroski, 1995) and thus, its survival. With small-to-medium businesses together accounting for half of industry employment, and over a third of industry value added in 2009-10 (Clark, Eaton, Meek, Pye, and Tuhin, 2012), the success of individual businesses is clearly instrumental in achieving a strong national economy.

Data on business innovation appear in regular suites of statistical collections, both in Australia and elsewhere. For example, The Australian Bureau of Statistics (ABS) undertakes regular studies of the incidence of innovation among Australian businesses, with detailed innovation data collected biennially, and core indicators available each year. In the most recent iteration for 2010-11, the ABS reported 39.1 percent of businesses were innovation-active (defined as businesses that undertook any form of innovation activity) (ABS, 2012a). Improved customer service and increased revenue were reported as the most common benefits of innovation. Similarly, in the United States, the National Science Foundation (NSF) regularly publishes statistics on business innovation (NSF, 2010). Their data indicates that about nine percent of for-profit companies in the US were identified as 'product innovators' during 2006-08 and that a similar figure were identified as 'process innovators'. Manufacturing industries in total were identified as leaders in innovation activity, with an average of 22 percent of companies reported as being either product or process innovators. The highest levels reported were in the computer/electronics subsectors, with up to 46 percent of businesses indicating some level of innovation. Their findings indicate a wide range of variation in innovation occurs between industry groups but also that

innovation is positively correlated with research and development (R&D) activity. While only 3 percent of companies reported R&D activity their innovative activity was much higher than those who did not employ R&D.

Setting aside this information about innovation for competitive advantage in *businesses*, a much more recent thesis is that innovation is also central to a *region's* competitive advantage and, in turn, to achieving national outcomes by accessing the full potential of regional Australia (Kinnear, Charters and Vitartas, 2012). The relationships between regional innovation and improved competitiveness continue to receive strong attention from academics as well as practitioners, particularly given the rapidly changing nature of regional dynamics through pressures such as globalisation and digitisation (Asheim, Isaksen, Moodysson and Markku, 2011; Dahlström, Olsen and Halkier, 2012). The emerging focus on 'place-based solutions', coupled with as-yet failed attempts to identify and truly understand effective regional policy, has also helped to drive a greater focus on innovation and its role in strengthening regions. There is already an entire literature devoted to unpacking the precise ingredients for innovation (and hence, for regional competitiveness), in Regional Innovation Systems (RIS), recent examples being Lundquist and Trippl (2013) and Isaksen and Karlsen (2013). Amongst other things, this incorporates commentary on sectorial patterns of innovation as well as regional innovation infrastructure. In policy contexts, it is particularly important to note that the latter includes not only the 'bricks and mortar' of hard innovation infrastructure (e.g. the presence of business incubation spaces), but equally – or perhaps even more importantly – the considerable soft capital of knowledge-producing institutions, as well as access to finance such as venture capital.

The distinction between hard and soft forms of innovation infrastructure is particularly useful when comparing the inventory of assets available for innovation across different locations, and the innovation activity that occurs there. A noticeable feature of the existing national-level innovation metrics (e.g., Australia, United States as described above) is that the results are rarely disaggregated specifically to the regional-area level, nor do they allow for a comparison between regional and urban areas. This is of concern given that disparity in regional, rural, remote and urban areas could reasonably be expected, especially in countries with large land masses and dispersed populations. On the face of it, smaller population concentrations are likely to have much reduced access to critical mass of knowledge-creation entities and/or vehicles for financing entrepreneurial activity.

In work that has been related to specific regions in Australia, The Brisbane City Council (2012) and Klass and Turnicov (2011) have reported benchmarking studies of innovation for Brisbane and the Perth/South West Corridor, respectively. Kinnear, Ogden and Mann (2011) have also reported on the impressions and value of innovation in a regional context based on a study of 79 business operators in Central Queensland. They examined the sources of new ideas, the meaning of innovation, barriers and enablers to innovation, and the interactions of businesses with their local university. The study highlighted the need for regional industry to be "offered more opportunities to network and collaborate to share ideas, and for strong leadership from regional organisations to demonstrate the need for, and value of, innovation in the region" (Kinnear et al, 2011, p.1).

The only identified national study of regional businesses in Australia has been reported by Vitartas and Kinnear (2012). In their study of 534 business operators, the authors observed that 76 percent of participants indicated some level of innovation, with the highest levels of participation in organisational and managerial process innovation. This is markedly higher than levels of innovation reported by the ABS (2012a) as indicated earlier and the authors suggested that regional Australia is a highly innovative landscape. Their study, while undertaken nationally, did not compare their results with a sample of city respondents, so differences between a regional and non-regional sample could not be determined.

In order for Australia to remain internationally competitive, all areas of the economy need to be actively involved in innovation. This is especially true in regional Australia, given that regions are major contributors to national productivity. It is critically important that innovation policy and programming are developed based on a strong evidence base. Despite this, and as the paragraphs above show, there is a paucity of research reporting on the levels of innovation in regional Australia. There are also exceptionally few accounts of the experiential knowledge regarding what support measures are likely to be most effective in terms of increasing innovation. For example, by having a good understanding of innovation across a broad range of areas (such as environmental sustainability, social entrepreneurship, or innovation in the public sector) and also by comparing performance across different sectors, clusters with weaker performance can be identified; specific policies to support or assist innovation and development in these areas can then be considered.

This paper addresses the knowledge gap on innovation in and by regional Australian communities, by presenting the results of an online Australian innovation survey, conducted with a sample of respondents who are familiar with

the issues faced in regional Australia. A particularly novel aspect of this work is to supplement official data on innovation in firms by surveying the opinions and perceptions of regional innovation leaders. This paper is arranged as follows. First, we outline the methodological approach undertaken to obtain the data, as well as provide details of the respondent profile. The key findings, in terms of both the innovation perceptions and practices reported by respondents, are then presented. These results are then compared and contrasted with the national business sample. Finally, a discussion of the policy implications of this study is provided.

Methodology

This study used a mixed-method (qualitative and quantitative) survey approach to explore the track record and perceptions of innovation across Australia, with a specific focus on contrasting the experiences of urban and regional centres. In order that the survey could collect adequate data on regional Australia, the sample population was based on an existing group of professionals working in and on regional Australia. Sustainable Economic Growth for Regional Australia (SEGRA) is a diverse network of practitioners which includes people operating regional development organisations, not-for-profit and community organisations; consultants; academics and researchers; and employees of local, state and federal government organisations. Over nearly two decades, the focus for SEGRA has been to champion ideas dealing with economic and social development, the environment and sustainability in regional Australia (Charters, Vitartas and Waterman, 2010). These ideas are then shared with policy development areas and decision makers via a series of communiques, proceedings and related publications.

The rationale for the use of the SEGRA delegates' database as the sample population is that these people represent regional Australia across the full diversity of social, economic and environmental spheres. Most have many years of experience and significant expertise in dealing with issues facing residents in regional Australia. For example, the latest available information from the SEGRA delegates listing (from which the sample was drawn) indicates that, in 2011, approximately 80 percent of the base was represented by senior staff (e.g. chief executive officers; government secretaries, deputy secretaries, or director-generals; chairs; directors and managers). This suggests that the sampled cohort represents those who are very knowledgeable about their organisations and those who are likely to be decision makers or who are seeking to influence policy relevant to regional Australia. Subsequently, the present study aimed to tap into this level of expertise and investigate how innovation was used and perceived by

practitioners in regional areas of Australia. This particular study also extends the findings of a parallel survey that was administered to predominantly regional small businesses (Vitartas and Kinnear, 2012). Both studies followed similar design and question content to that used in the regular Australian Bureau of Statistics' (ABS) data collections. However, it should be noted that the results of this study are not directly comparable to those of the ABS, given that the former reflects a sample cohort with a quite unique composition, reflecting its derivation from the SEGRA database.

Respondents completed an online survey of innovative activity as reported by Vitartas and Kinnear (2012). The survey collected data on the individual's views about their organisation's innovative activity, as well as the performance and drivers for that activity. In addition, questions on collaborative activity, barriers and enablers, and factors that would contribute to greater innovation were explored. Respondents were also asked a number of questions that captured their opinion about regional innovation systems, the contribution of innovations to regional development and obtained an overall measure of attitudes toward innovation, along with demographic and classification questions.

Results

A total of 405 responses, representing a response rate of 19 percent, were obtained from an online survey mailed to a database of 2,138 potential respondents who had been identified as having an interest or expertise in regional issues or who had attended a national conference with a focus on regional Australian issues. There was a generally balanced representation from each State and Territory, although slightly higher proportions were recorded from Queensland and Western Australia compared with the overall population.

In order to contrast regional data with that of urban areas, the sample was divided into two groups, the first from capital city areas (referred to as 'urban') and the second from non-capital city areas (described as 'regional'). Two-thirds of participants were located in regional areas rather than urban locations, with 41 percent of the total sample indicating they lived more than 200km from their capital city. It is important to note here that the term regional has been used as a generic descriptor; however, the sample included people from both rural and urban centres within regional areas.

The participant cohort was also broadly characterised as follows: the male: female breakdown of the sample was 67 percent : 33 percent; with over half (56%) of the respondents in the 50-64 years age bracket, 28 percent aged 35-49 years and 9

percent indicating they were over 65 years of age. As might be expected from a sample based on past participation at social and economic development conferences, the education levels of participants was skewed toward a highly educated group, with 60 percent indicating they had a degree and a further 14 percent a diploma or other tertiary qualification. This compares very favorably with the Australian average, of which only 25 percent were bachelor-qualified at latest Census (ABS, 2012b). A total of 86 percent indicated they were employed full-time with the majority in professional or managerial roles. All respondents were in employment at the time of participating in the survey.

The majority of respondents (64%) indicated their organisation had been operating in the region for more than 20 years. Also, the organisations were generally larger in size, with over half (62%) employing 20 or more employees and a further 17 percent employing 5-19 employees. The industry groups had higher proportions from professional and technical services, administrative support, public administration and education than national averages, with lower representation from manufacturing, construction, retail and health care. The largest proportion of respondents were those employed in local government organisations (35%), with an additional 13 percent and 5 percent being employed in State and Federal organisations, respectively. Slightly less than 20 percent of the respondents represented private firms while around 8% were employed in the university sector and a further 16 percent by non-government organisations.

Innovation in Regional Australia

Innovativeness was measured in this study in a number of ways. Initially, respondents were asked to define what innovation means to their organisation, using an open-ended format. 'New' was a key word used in these responses. For example, the term was applied to a range of activities such as 'ways of doing things', 'technology', 'business' and 'products'. Other recurring words included 'ideas', 'improvements' and 'thinking'. These perspectives are consistent with attributes that have been associated with innovation from the literature (Baregheh et al., 2009). Respondents were then asked to indicate whether their organisation had implemented any "new or significantly improved…" forms of innovation: here, they were provided with a list of sixteen different types of innovation under the broad headings of goods and services (i.e. product innovation), operational processes, organisational/managerial processes or marketing methods.

Table 1 presents the count of respondents who indicated that a type of innovation had been implemented by their organisation in the past 12 months, including the total number of respondents by each category (innovation type). The results are

also split depending on whether the respondent identified as being from an urban or a regional area.

Table 1: Type of innovations undertaken by Australian organisations, comparing across urban and regional settings

Types of innovations	**Count**	**Total %**	**Urban %**	**Regional %**
Goods	46	11.4	8.0	13.3
Services	285	70.4	68.1	71.5
TOTAL GOOD AND SERVICES (PRODUCT INNOVATION)	**293**	**72.3**	**69.6**	**73.8**
Method of manufacturing or producing goods and services	69	17.0	15.2	17.9
Logistics, delivery or distribution methods for goods and services	99	24.4	21.7	25.9
Supporting activities for business operations	203	50.1	47.8	51.3
Other operational processes (e.g. purchasing, accounting or computing, etc.)	101	24.9	19.6	27.8*
TOTAL OPERATIONAL PROCESSES INNOVATION	**302**	**74.6**	**68.8**	**77.2**
Knowledge management processes	239	59.0	59.4	58.9
Organisation of work within the business	212	52.3	54.3	51.3
Relations with other businesses or public institutions	238	58.8	60.1	58.2
Other organisational/managerial processes	78	19.3	17.4	19.8
TOTAL ORGANISATIONAL/MANAGERIAL PROCESS INNOVATION	**353**	**87.2**	**85.5**	**87.5**
Changes to the design or packaging of a good or service	122	30.1	27.5	31.6
Sales or distribution methods	136	33.6	35.5	31.9
Other marketing methods	137	33.8	31.2	34.6
TOTAL MARKETING METHOD INNOVATION	**261**	**64.4**	**63.8**	**64.3**
Other innovation	46	11.4	13.0	10.3
No innovation in past 12 months	18	4.4	4.3	4.6
Can't say	20	4.9	5.8	4.6
N		401	138	263
* Pearson Chi-Square significant @ 0.05 level				

As a general observation, it can be noted that there were relatively high levels of innovation identified across the range of innovation types. All but 13% of respondents identified an organisational/managerial innovation; there were also

high levels of operational processes innovation (74.6%) and goods and services (product) innovations (72.3%). Marketing method innovation was indicated by 64.4 percent of respondents. These results are higher than the national figures provided by the ABS (2012a) and also the national regional sample reported by Vitartas and Kinnear (2012). Just over nine percent of respondents either 'couldn't say' or indicated no innovation had taken place in their organisation in the past year. It would therefore appear that there was a high level of innovation occurring in the organisations of the respondents to this survey. Notably, there was only one significant difference detected between the groups, in the area of 'other operational processes', where regionally based respondents far outnumbered their urban counterparts.

An alternative approach to understanding innovativeness involved an assessment of organisational innovativeness as perceived by respondents. Participants were asked to consider the 'extent to which their organisation is innovative' as measured on a five-point scale ranging from 'not innovative at all' to 'very innovative'.

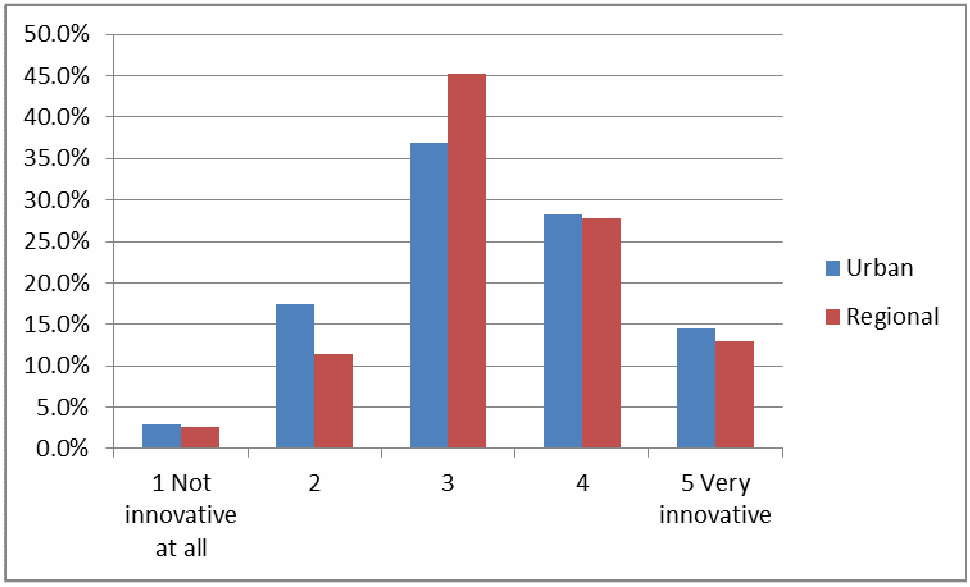

Figure 1: The perceived innovativeness of Australian organisations (percent), grouped by geographical nature (urban compared with regional)

The distribution of results was positive with 70.3 percent of respondents giving a score of 3 or 4, indicating their organisation was moderately or slightly innovative (Figure 1). There was no significant difference between the two geographic

groups (urban compared with regional) although an examination of the graph suggests urban respondents were more polarised (both more positive and more negative) in answering the question. Thirteen percent of respondents indicated their organisation was 'very innovative', while three percent indicated 'not innovative at all'. The majority selected the midpoint and there were more scoring 4 on the positive side than 2 on the negative side of the scale.

Further analysis revealed that there was only a moderate correlation (r = 0.4) between the number of innovative activities indicated by respondents and their corresponding innovativeness score. This suggests some disconnect between the reported 'perceptions of innovations' compared with the actual number of innovative activities reported as being undertaken by each organisation.

Prior research has indicated links between innovativeness and business size. A national study of Australian businesses (ABS 2012a) found that the proportion of innovating businesses increased with business size, ranging from 31.6 percent for businesses with 0-4 people employed, to 65.9 percent for those businesses with 200 or more people employed. In this study the proportion of regional businesses undertaking innovations appears equal or higher across most employer groups. The exceptions are for Goods and Services with 0-4 people, Organisational/managerial Processes for organisations with 0-4 and 20-199 people and Marketing Methods for organisations with 0-4 and 20-199 people (Table 2).

Table 2: Levels of innovation in regional and urban Australian organisations, including breakdown of innovation by type and number of employees

Innovation type	**Area**	**Number of employees in organisation**			
		0-4	**5-19**	**20-199**	**> 200**
Total good and services	Urban	78%	56%	71%	68%
	Regional	67%	75%	78%	74%
Total operational processes innovation	Urban	63%	61%	83%	65%
	Regional	72%	79%	83%	74%
Total organisational/managerial processes	Urban	85%	78%	94%	83%
	Regional	84%	85%	90%	90%
Total marketing method innovation	Urban	74%	61%	71%	54%
	Regional	61%	79%	62%	59%

The proportion of businesses innovating in this sample was relatively high compared with regional Australian small and medium enterprises (SMEs) as reported by the ABS (2012a), regardless of employee size. Organisations with 0-4 employees in many cases had higher levels of reported innovation than for some employers. In many cases employers with more than 200 staff had lower proportions of innovation reported than for the smaller employees. It would appear, for this sample, that larger organisations were less innovative than some smaller firms. There was no significant difference between innovativeness of organisations from urban and regional areas. These results could be a reflection of the SEGRA sample, which includes a higher proportion of respondents from larger organisations than appears nationally as captured by ABS data.

Collaboration for Innovation

A number of researchers have examined the effect of collaboration on innovation and innovation capacity (see for example Forsman, 2011). Collaboration, it is argued, assists in understanding and obtaining access to new markets and lower production costs (Karaev, Koh and Szamosi, 2007). Information about patterns of collaboration was captured in this study through a number of questions. Over eighty percent of participants (84%) reported that their organisation collaborated with at least one partner in order to implement recent innovation(s) (Table 3).

Table 3: The nature of collaborative partners for Australian organisations in urban and regional settings (participants could select multiple responses)

Collaboration with	Urban		Regional	
	N	%	N	%
Local government	59	48	145	61*
State government	59	48	134	56
Business and industries within the local region	51	41	120	50
Regional economic development organisations	36	29	108	45*
Other part of my organization	51	41	101	44
Federal government	37	30	79	33
Business and industries within the state	39	31	74	31
Universities	28	23	69	29
Business and industries within Australia	33	27	46	19
Other business and industries internationally	20	16	21	9*
Other	9	7	15	6
None	8	7	9	4
Can't say	4	3	5	2
* Pearson Chi-Square significant @ 0.05 level				

Levels of participation in collaboration by respondents from urban and regional areas were similar with the exception of local government, and regional economic development organisations, where regional collaboration was higher, and other business and industries within Australia, where urban responses were higher. The most common collaborative partners were regionally based local and state government followed by local business and industry. By contrast, national businesses indicated they collaborate most often with other businesses, both locally and state-wide (Vitartas and Kinnear, 2012).

This difference can possibly be explained by the sample being likely to have good linkages to state and local governments and local businesses. Federal government and universities were also mentioned by a greater proportion of this sample, compared with the businesses reported in Vitartas and Kinnear (2012), suggesting that pipelines of innovation may differ for the business sector compared with government and non-government organisations. The entities that were least often selected as collaborative partners included other business in Australia and international collaborators. Based on the findings from this study, it would appear that this sample of respondents use networks and collaborations extensively in their innovations.

Motivations for Innovation

Understanding the motivations for undertaking innovation in regional Australia is important in developing and implementing innovation policy, as well as identifying support mechanisms to foster and aid regional development more generally. Participants in this survey indicated that the most common drivers were related to customer service and improving quality, closely followed by responding to government requirements. There were few noticeable differences observed between the urban and regional respondents, with respect to the proportions of each that identified the different drivers. However, notable exceptions to this were more urban respondents indicating the desire to be at the cutting edge of the industry while regional respondents indicated the desire to improve information technology (IT) capabilities and to ensure the business' products were competitively priced as drivers of innovation (Table 4).

Whilst a high value was placed on the need to meet customer needs and improve product and service quality, the enablers of these areas were not indicated as often. For example, increasing export markets, improving safety and ensuring pricing is competitive are all important in impacting on organisational sustainability and how the customer is serviced; however, fewer than 30 percent

of respondents indicated these factors as motivators for innovation. This observation is also apparent in national figures (ABS, 2012a).

Table 4: Drivers of innovation by respondent area (participants could select multiple options)

Drivers of innovation	**Urban**		**Regional**	
	N	%	N	%
Increase responsiveness to customer needs	93	67	181	69
Increase efficiency of supplying/delivery goods or services (products)	69	50	144	55
Improve quality of goods and services (products)	60	44	126	48
In response to government regulations or standards	57	41	121	46
Improve IT capabilities or better utilise IT capacity	41	30	107	41*
Profit-related drivers	47	34	100	38
Reduce environmental impacts	62	45	99	38
Be at the cutting edge of the industry	62	45	89	34*
Increase capacity of production or service provision	47	34	86	33
Establish new markets	42	30	80	30
Increase or maintain market share	37	27	79	30
Improve safety or working conditions	40	29	71	27
Ensure the business' products are competitively priced	17	12	52	20*
Increase export opportunities	15	11	24	9
Other	6	4	13	5
Can't say	4	3	9	3
Total competition, demand and market-related drivers	119	86	221	84
Total production and delivery drivers	107	78	220	84
*Pearson Chi-Square significant @ 0.05 level				

Barriers and Enablers of Innovation

Respondents reported access to funds, government regulation and the cost of implementing innovations as the key reasons for not implementing innovation, or as measures that hampered the development of innovations (Table 5). In each of these cases regional respondents held these views more strongly as indicated by a significantly higher proportion identifying the item. A lack of skilled people in the labour market was also perceived differently and more highly by regional respondents. Uncertain demand and access to IT were not viewed as barriers by the majority of respondents. These themes were broadly comparable to those

recorded from Central Queensland, where the top barriers for innovation included financial constraints (20% of respondents); cultural resistance, lack of time, and government policy and bureaucracy (Kinnear et. al, 2011).

Table 5: Barriers to innovation within Australian organisations in urban or regional settings (respondents could select more than one option)

Innovation barriers	**Urban**		**Regional**	
	N	%	N	%
Lack of access to additional funds	60	44	156	59*
Government regulations or compliance	44	32	124	47*
Cost of development or introduction/implementation	50	36	120	46*
Lack of skilled persons within the organisation	44	32	90	34
Attitude of staff towards change	40	29	79	30
Lack of skilled person within the labour market	22	16	70	27*
Lack of access to knowledge or technology to enable development or introduction/implementation	31	23	52	20
Other barriers to innovation	25	18	30	11*
Uncertain demand for new goods or services (products)	21	15	27	10
No barrier	3	2	3	1
Can't say	1	1	1	0.5
*Pearson Chi-Square significant @ 0.05 level				

When asked to indicate which items would make an organisation more innovative in the future, respondents from both urban and regional areas indicated networking and alliance building and forums for idea exchanges would be the most beneficial, followed by training in leadership and assistance in government support programs (Figure 2). A larger proportion of regional respondents indicated a desire for training in leadership and assistance in government support programs, business advice and access to venture capital, compared with urban respondents. Financial advice and training in intellectual property or commercialisation were least mentioned as desirable means of assisting innovation.

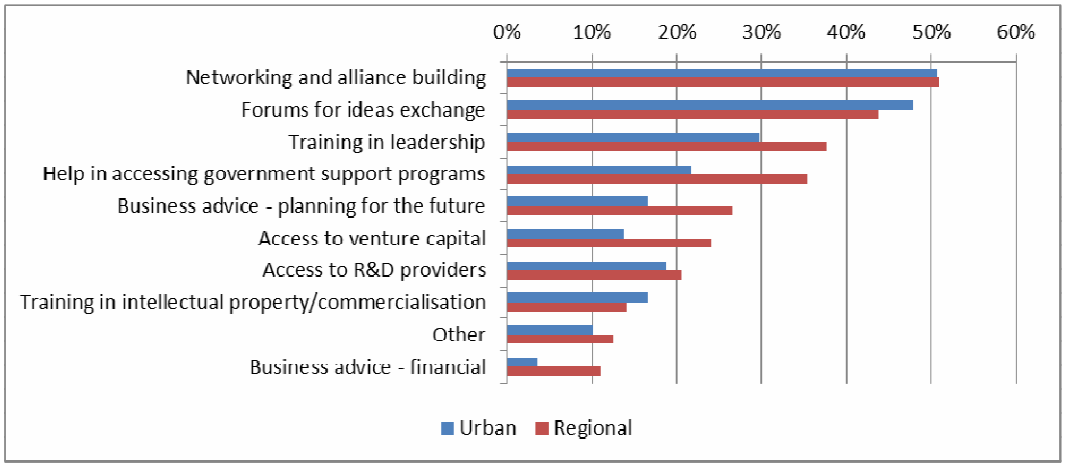

Figure 2: Enablers of organisational innovation in Australian organisations (respondents could select more than one option)

Respondents were also asked to indicate what they thought would contribute the most to the development and implementation of innovation in their local region. They were provided nine options and were asked to select amongst these for the top three items. In reviewing the overall summary of responses (Table 6), the most common responses were funding delivered by State and Federal government, improvements to transport infrastructure, leadership by regional businesses and industry groups, and population growth or regionalisation strategies. For the first two factors and population growth, significantly higher proportions of regional respondents indicated these items. The carbon tax was seen as a more important factor by urban respondents than those from the regions. The least powerful factors for regional respondents included environmental policies and/or the presence of Regional Development Australia (RDA).

Table 6: Factors that would 'contribute the most to the development and implementation of innovation in your local region' (respondents were asked to select their top three options)

Factors contributing to development and innovation	**Urban**		**Regional**	
	N	%	N	%
Funding delivered by State/Federal government	54	39	130	49*
Improvements to transport infrastructure	42	30	103	39*
Leadership by regional business/industry groups	49	36	100	38
Population growth / regionalisation strategies	33	24	96	37*
The work of local government	32	23	78	30
The rollout of the national broadband network	51	37	77	29
Growth/development of regional university campus	21	15	54	21
The presence of Regional Development Australia	17	12	38	14
The carbon tax, renewable energy targets and other environmental policies	40	29	35	13*
Other	9	7	15	6
Can't say	3	2	0	0

Contribution of Innovation to Regional Development

Is innovation perceived as contributing to the local region? To explore this question, respondents were asked the extent to which they believed that the innovations they had identified in earlier questions contributed to the development of the local region. Responses were positive ($\bar{x} = 3.43$), with almost half (48%) indicating a rating of 4 or 5; and only 5 percent of respondents indicated the innovation had 'no contribution' to their region. Statistical differences were not detected between the urban and regional respondents.

A further question investigated the nature of the contribution across three broad areas of economic, social and environmental benefits. The results are presented in Figure 3.

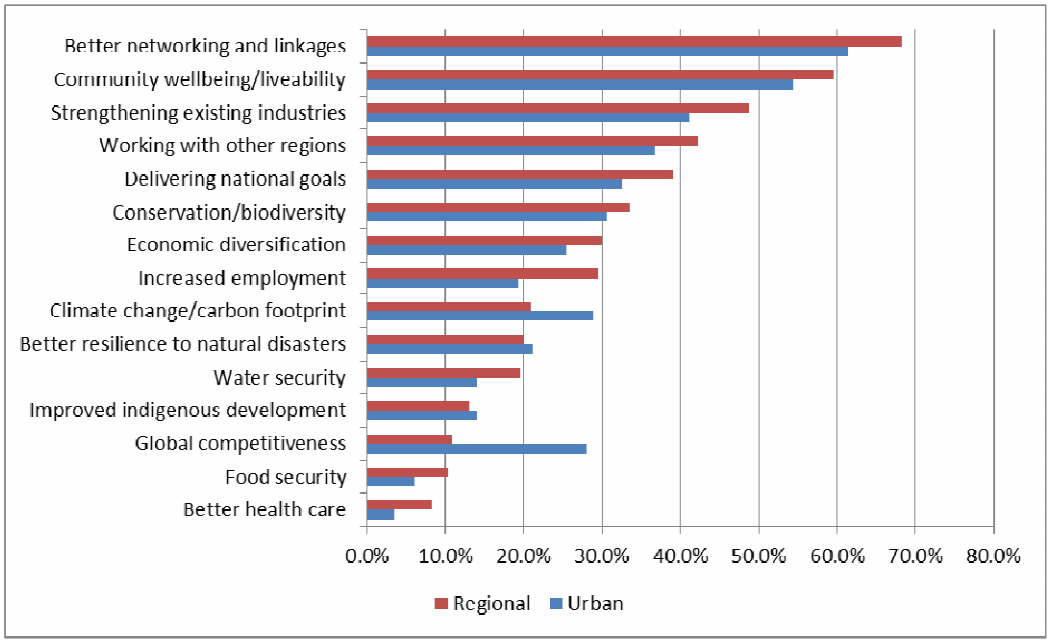

Figure 3: Most common responses from participants concerning the contribution of innovation to their local region

Economic benefits were indicated the most frequently by respondents (61%) in terms of contributions to the development of the local region. These benefits were thought to accrue through building better networks and linkages, and strengthening existing industries. Social benefits were indicated by 55 percent of respondents, with community wellbeing and liveability regarded as being beneficial by most. Environmental benefits were mentioned by 42 percent, with working with other regions and conservation/biodiversity the main beneficiaries. Innovation was seen as least beneficial for the three social outcomes of health care, food security and improving indigenous development.

Attitudes toward Innovation

To obtain additional understanding of respondents' views on innovation, they were asked their level of agreement to a series of statements about the future of innovation and their perception of innovativeness among governments. Respondents agreed that there were good opportunities for innovation in their local region, but that more help is needed for their region to be innovative (Figure 4). In particular, regional respondents had significantly higher mean scores with this item compared with urban respondents ($\bar{x}_{urban} = 2.99$; $\bar{x}_{regional} = 3.33$; $t_{(df393)} = 3.77$). There was also agreement that there are more opportunities in the local

region to innovate than in the past decade. Respondents provided mixed answers as to whether they believed their region was innovative, with the sample split between agreeing and disagreeing. In relation to the innovativeness of government, in total, respondents disagreed that local, state and federal governments were innovative.

The underlying message from these data is that participants believed that regions need more assistance to help drive innovation; and that regions are good places to realise opportunities for innovation. Respondents also indicated that current innovation activity by the three levels of government was unsatisfactory.

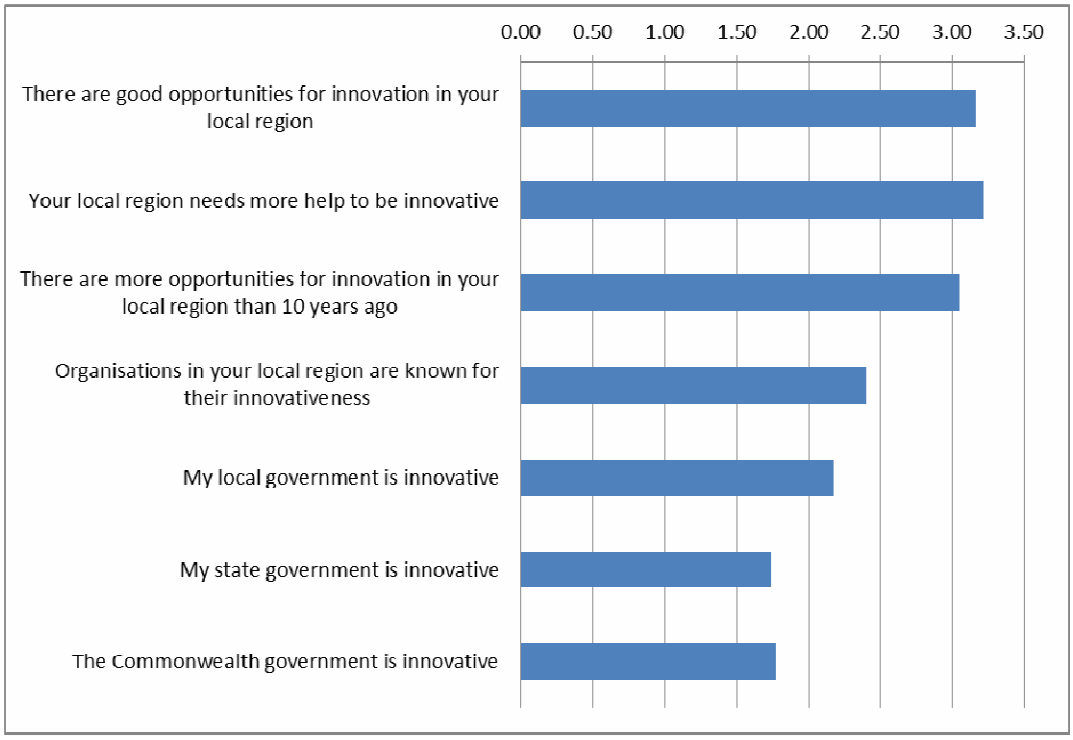

Figure 4: Respondents' attitudes toward innovation*

* Graph shows the mean score, compiled from the responses of 5=Strongly Agree, 4=Agree, 3=Neither agree nor disagree, 2=Somewhat disagree, 1=Strongly disagree.

Discussion

This study has highlighted a high level of innovation apparent among Australian organisations, when based on a sample group with keen interest in rural and regional issues. The respondent cohort was a highly educated group, with most working in government and/or research organisations; this is a strikingly different sample compared with other reported accounts of Australian innovation (ABS, 2012a; Vitartas and Kinnear, 2012; Kinnear et. al, 2011). Overall, the results depict a positive outlook on innovation by the research participants, and agreement that innovation has a role to play in contributing to regional development. Given this philosophy, it was unsurprising to note that 90 percent of the respondents in this survey identified some level of innovation occurring in their organisation, with a large proportion of these occurring in organisational and managerial processes in order to better respond to customer needs.

A curious finding from this study was that the perceived innovativeness of an organisation was not strongly associated with the actual number of innovations reportedly undertaken by the organisation. This suggests that perceptions of innovation could be independent of the traditional metrics for innovative activity. A possible explanation for this is that individuals may relate innovation to a number of other attributes: previous research has identified five of these, including relative advantage, compatibility, complexity, trialability and observability (Rogers, 2003). The way an innovation is perceived by an individual, it is suggested, is likely to influence the way an individual behaves and acts in relation to innovations (Adams, 2003). An individual's perception can therefore likely influence the adoption and uptake of innovations and foster the culture of innovativeness within the organisation. So, while an organisation may have many examples of innovations the perceptions of the staff may not necessarily align with the innovative activity undertaken in the organisation and therefore negatively impact on the perceived innovativeness of the organisation and the actions of the employees. Here, the policy implication is in recognising the need to create positive attitudes to innovation, and have innovation recognised and celebrated in organisations and the community more broadly.

No clear evidence could be found in this study of increased levels of innovation being linked with the size of the firm. The data suggest that the extent of organisational innovation peaks with firms employing up to 199 employees before declining, and that the effect was apparent across both urban and regional groups, as well as across each innovation type. Within this, however, variances by innovation type and firm size did exist: for example, among some innovation types there was more innovation in small organisations (0-4 employees) compared

with organisations with 5-19 employees. This was most apparent in the urban areas. It would appear, for this sample, that as the organisation grows, economies of scale play a part in the use of innovation; however, the point is then reached when the firm's size limits the extent of innovation, possibly because of bureaucratic processes. It is noted, however, that this finding may be particular to this sample of respondents.

Networking, alliance building and forums for idea exchanges were regarded as the most important enablers of organisational innovation among both urban and regional groups. This can be further supported by government funding or grants, improvements to transport infrastructure, leadership and population growth strategies.

The sample used in this study comprised a highly innovative group and provides a good basis by which to explore and understand innovation in regional areas. Many of the respondents are developing, leading or implementing regional programs and policy that require innovative processes to be developed and administered in order to provide services for clients and customers. While they see good opportunities for innovation and believe there are more opportunities for innovation than a decade previously, they also agree that their region needs more help to be innovative. This could be through targeted and funded programs; however, they do not see environmental policies and the presence of RDA providing those opportunities – this is despite many respondents potentially being, or previously, involved in RDA. The poor clarity around the role of RDA since its inception may be a contributing factor to this situation (Buultjens, Ambrosoli and Dollery, 2012).

In this survey, the lack of access to funds, cost of development, and government regulations or compliance were the main barriers to innovation, and respondents recommended creating better opportunities to network and build alliances, and conducting forums for idea exchanges as enablers of innovation. These suggestions would bring people closer together and create better understanding of markets and customer needs and identify new ways of doing things and finding new markets.

Optimising Innovation for 'Regional Advantage'

Regional organisations provide the soft infrastructure that supports much of the output that drives the Australian economy. The results presented in this paper, which are based on a sizeable sample of knowledgeable and interested people on issues relating to regions, confirm that innovation is an important part of

supporting the economy and social development of regional Australia. However, there is a clear perception that more could be done to support businesses achieve improvements across marketing, managerial and operational processes and in the production of their goods and services.

The findings from this study highlight that while collaboration is occurring between Australian organisations to assist innovation, few entities were collaborating with businesses outside their region, and particularly not with universities or international businesses. These latter organisations have the capability and (in many cases) the available resources to engage and partner with businesses to identify opportunities, develop new markets and create efficiencies in business practices that will lead to greater competitiveness among businesses, and among regions more widely. Conferences with a focus on regional issues that include a good mix of academics, business operators, and representatives from government provide opportunities to develop these connections and discuss issues from broad perspectives and bases. Further support to encourage the development of networks and to ensure the connections extend beyond the life of the initial meeting will assist in bridging alliances and building strong productive networks.

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