

# innovation in business

## **Making business innovation a priority**

*“Innovation is critical to Australia’s national future. Our prosperity, our economic strength and our ability to compete in the global economy all depend on valuing innovation, harnessing its potential and putting it to work for the benefit of all Australians... In particular, we need to find ways to increase innovation performance across the economy, to ensure business has better access to new ideas and new technologies and to bridge the divide between industry and research...”*

*In today’s economy, innovation policy is industry policy.”*

Senator the Hon Kim Carr, 22 January 2008, announcing the Review of Australia’s National Innovation System

### Finding the hidden realities of innovation

Innovation is more widespread than is often imagined, occurring everyday in the way business enterprises operate, meet the needs of customers, and organise their people and processes. This is not traditional science and research-led innovation. It is the non-technological innovation that occurs and transforms businesses as they engage with their customers and markets.

This market-facing business innovation is often overlooked and undervalued. But if it is ignored, Australia squanders an opportunity to make the productivity gains we need to maintain our prosperity and living standards.

This challenge is well recognised in the UK where the National Endowment for Science, Technology and the Arts produced a blueprint report in October 2006 entitled *The Innovation Gap. Why policy needs to reflect the reality of innovation in the UK.*

*Innovation is all-pervasive, frequently found in unlikely places and is rarely based on traditional understandings of linear 'pipeline' research and development.*

Another critic of the overemphasis on the linear research-to-commercialisation 'pipeline' model of innovation is UK author and commentator, Charles Leadbeater<sup>1</sup>:

*Innovation rarely proceeds down an orderly pipeline from boffin to consumer. Innovation often involves changes to business organisation and consumer behaviour as much as science and technology. Many innovative organisations in the UK have no formal R&D capability: they innovate in the job, often through interaction with clients and markets. Often innovation is highly networked and interactive, involving a wide range of players, not least of the ultimate consumers of products and services...*

The realities of business innovation were recognised in the submission to the Review by the Group of Eight:<sup>2</sup>

*In the real world most innovation occurs in established firms in existing industries through incremental improvements, involving non-scientific and non-R&D based knowledge such as creative design, marketing, organisational improvement and tooling up.*

<sup>1</sup> Charles Leadbeater, The Ten Habits of Mass Innovation, in: Making Innovation Flourish, National Endowment for Science, Technology and the Arts, November 2006.

<sup>2</sup> Group of Eight - Submission no. 372

Gary Banks, Chairman of the Productivity Commission in his 2008 Colin Clark Memorial Lecture<sup>1</sup> also recognises the significance of non-technical innovation:

*Innovation is sometimes seen as synonymous with technological advances. But it is far wider than that, encompassing changes to all facets of an enterprise's operations, its relationships with its workers, its suppliers and its customers. According to survey data, only 30 percent of what the ABS defines as 'major innovating firms' actually undertake R&D... It is clear that the heightened pace of change will put a premium on business flexibility and adaptability.*

Innovation is all about the firm and what happens in businesses. Businesses are the point where new value is created from innovative activities.

Innovation outcomes are shaped by interactions within and across a dynamic system. But as the key players in converting ideas, knowledge and technology into market competitive goods and services, businesses represent the cornerstone of an innovation-based economy and the main mechanism through which the wide benefits of innovation are diffused.

Innovation in business is important because it is the primary driver of competitiveness for firms differentiating their products and services from those of low-cost competitors in globalised and deregulated markets.

That Australian businesses need to collectively improve innovation performance is well recognised. Continuous innovation, or the repeated successful introduction of novel products and services, is the only sustainable strategy for firm survival and progress in rapidly changing and turbulent technological and market circumstances

This is a challenge for all business – not only those in high-technology sectors – that are competing on the basis of quality, specialisation, flexibility, customisation and cost. Innovation in businesses includes the non-technological and non-R&D based innovations that typically characterize services businesses in a knowledge-based economy enabled by the increasing sophistication and ubiquity of advanced ICT connectivity.

<sup>1</sup> Gary Banks, Industry Policy for a Productive Australia, Productivity Commission, Brisbane, August 2008.

### New innovation patterns

In addition to recognising the broader dimensions of business innovation, we must appreciate that the active ingredients and patterns of innovation are fundamentally changing.

In a globalised knowledge-based economy, patterns of innovation have evolved and shifted beyond the sole gifted inventor or scientist, or the adept researcher and technologist. They are more diverse and complex than just the picture of the creative entrepreneur with proven commercial acumen.

This more nuanced understanding of the dynamics of innovation and in particular of how value is created to lift productivity and prosperity is well presented in a paper by John Steen, Sam Macaulay and Tim Kastle.<sup>1</sup>

Steen et al present the evidence of value being created from innovation as a system of forming connections and recombining knowledge and technologies which in turn, drive competitive performance:

*Newer models of the innovation process make no ... assumptions about value being inherent in any particular process, idea or technology. Value is created through rearranging and recombining knowledge, people, processes and technologies. This problem-solving and improvisational activity is most clearly seen in project businesses and complex product systems such as wind turbines (for instance Vestas Wind Systems), construction (such as Laing O'Rourke) and management consulting (like Deloitte).*

*It can also be seen in new Australian ventures such as Beeline. While tractors and global-positioning systems are established technologies, combining these to create planting and harvesting efficiencies in large-scale agribusiness is yet another example of innovation by recombination and connection.*

The ways businesses innovate are changing. They are adopting new models of innovation by better integrating a wide range of internal activities – such as marketing, operations and design – and being more open to external sources of ideas and the possibility of new routes to market.<sup>2</sup> This has meant engaging with a larger number and wider range of collaborators.

<sup>1</sup> Steen, J, Macauley, S., and Kastle, T, Mapping and Managing Networks for Innovation Performance: New Perspectives and New Tools, in The Human Dimension of Innovation, Australian Business Foundation, (to be published 2008).

<sup>2</sup> Chesbrough, H. W., Open Innovation: The new Imperative for Creating and Profiting from Technology, Harvard Business Press, 2004.

Henry Chesbrough, one of the popularisers of this trend describes the shift to a more distributed, flexible pattern of operations as a move from 'closed' to 'open' innovation. In this model the innovation process has become increasingly complex. To innovate, firms must involve a greater number of players more closely and intensively to realize the commercial potential of their ideas.

Openness has been shown to be beneficial for firm innovativeness and performance.<sup>1</sup> It increases the amount of resources and information available to the firm and the opportunities to recombine previously disconnected ideas.<sup>2</sup> Contemporary business innovation is characterised by more fluid interactions between internal and external activities, where ideas, people, and resources flow in, around, and out of organisations. The boundaries between internal and external activities and the firm's general operating environment are more permeable, making it important to extract as much knowledge from the external environment as possible. In particular, the lesson from virtually all studies of innovation shows that the miraculous alchemy of innovation occurs close to the customer setting. Increasing user-driven or inspired innovation<sup>3</sup>, especially in the service industries which dominate our economy, highlights the absolute importance of innovation policy being driven from a demand-side, market-facing perspective.

The changing nature of innovation was also commented on by Gary Banks, Chairman of the Productivity Commission:

*...innovation models are evolving. Gone are the days when most business innovation was conducted within the walls of the company seeking to improve its production processes or bring a new product to the market. New technologies, as distinct from their specific applications, are increasingly being bought and sold, leading to new forms of pricing knowledge. Also, potential users of an innovation are much more likely to involve themselves in its development rather than waiting for it to be brought to market.<sup>4</sup>*

### **A focus on services innovation**

Services innovation deserves some particular attention as there is increasing recognition that services, being dominant and pervasive features of advanced economies, are significant contributors to productivity gains, business and employment growth and enhanced prosperity in society at large.

1 Laursen, K. and Salter, A., Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms, *Strategic Management Journal*, 27(2) 2006.

2 Fleming, L., Recombinant uncertainty in technical search, *Management Science*, 42, pp 117-132, 2001; Hargadon A. B. and Sutton, R. I., Technology brokering and innovation in a product development firm, *Administrative Science Quarterly*, 42, 1997

3 von Hippel, E., *Democratizing Innovation*. The MIT Press, Cambridge, Massachusetts, 2005.

4 Banks, G., *Industry Policy for a Productive Australia*, Productivity Commission, Brisbane, August 2008.

The April 2008 report by the Prime Minister's Science Engineering and Innovation Council (PMSEIC) Working Group on Services Innovation, *Science and technology-led innovation in services for Australian industries* identifies two modes of services innovation:

- innovation *in* services industries, where innovation is either applied to an industry regarded as service-based, or results in a new service-based industry such as water monitoring services, internet service providers, or innovative uses of IT and digital imaging by hairdressing businesses; and
- innovation *through* services in any organisation or business where the application of a service results in innovation in an industry generally not classified as services, such as the use of sonar, GPS and remote sensing satellites to enhance the location, harvesting and productivity of the fishing industry.

The submission to the Review from the Australian Services Roundtable<sup>1</sup> highlights the distinctive characteristics of services innovation and how it can contribute substantially to driving sustained improvement in Australia's productivity performance.

Innovation in services tends:

- To take place specifically at the point of interaction between services provider and the client.
- To be driven by client relations more than is the case for innovation in manufacturing. Service companies must maintain a flexible approach to innovation, constantly changing to solve client problems and meet new needs.
- To be people-driven as well as laboratory-driven, ie to break the bounds of traditional hierarchy by requiring integrated input from all kinds of operational, organisational, technical and managerial staff as well as researchers.
- Not to offer necessary economies of scale, as in manufacturing.
- To involve a high level of interaction and interdependence between knowledge providers (such as research organisations) and knowledge users (such as service firms) – to the extent that the term co-innovation has relevance.
- To be focused not only on new suites of services but also on new modal delivery methods for those services and on new business models to reach new markets.

<sup>1</sup> Australian Services Roundtable – Submission no. 613

- Not to take place as a specialised and separately accounted activity located in a separately identified part of a firm but to be inextricably tangled up with everyday creativity and design.
- To show evidence of a strong responsiveness to both technological and non-technological inputs, including when provided jointly.
- To involve the social as well as the natural sciences.
- To involve the creative arts and humanities.
- To suffer from inadequate formal or informal access to collaboration opportunities between services providers and the education and R&D community.

The Australian Services Roundtable goes on to argue that services innovation not only makes services firms internationally competitive, but also allows them to be ‘enablers’ and ‘change agents’ and thereby the mechanisms through which much innovation takes place in other traditional industries and across the economy.

By examining services innovation, we put the spotlight squarely on those hidden non-technological aspects of business innovation that are the source of competitiveness and productivity. That is, we focus on the demand side or market-pull dimensions of innovation, where value is created by firms transforming their business offerings and capabilities in order to solve customer problems more imaginatively.

This is particularly relevant to innovation in services, where firms differentiate themselves by their intangible assets like the skills of their people, the way they engage and serve their customers, the character of the customer experience, the ability to use and re-use knowledge and thereby provide valued solutions for which customers are prepared to pay.

Imperial College’s Professor John Bessant has made the point that while there are many elements of similarity between innovation in services and innovation in manufacturing, what distinguishes services innovation is the crucially important role of customers and the way companies respond to their understanding of market and customer demands.<sup>1</sup> Services companies compete and innovate to gain their competitive edge by their skill at relationship management, that is, by intimately understanding their customers and servicing their (sometimes unarticulated) needs. Services innovation is strongly driven by customisation, even individualisation, where discerning customers are not passive but are fully engaged in designing the services that they are purchasing. Close relationships with customers help services companies defend against imitators and low entry barriers.

<sup>1</sup> PMSEIC Services Innovation Working Group discussions, Melbourne 29 November 2007

Services innovation brings to the fore non-technical skills such as teamwork, co-operation, negotiation and communication; together with new areas like social network analysis.

Finally, new patterns of knowledge-intensive business activity round out the picture of the contribution of services innovation to competitive performance and productivity. These shifts in the competitive behaviour of successful Australian firms have been identified as:

- new hybrid business offerings that blend products and services for customer problem-solving;
- complex product systems and project-based activities like airports, stadiums and other infrastructure projects;
- proficiency as technology integrators, rather than just either technology producers or users; and
- competing by distinctive knowledge management or by sustained incremental innovation.<sup>1</sup>

### **Boosting innovation capabilities in firms**

Businesses make decisions about innovation based on their particular competitive positions, available resources and strategic intent. Innovation spending by firms is different to most other investments they make. It tends to be riskier, involve more parts of the firm, usually involves some form of collaboration with external parties and is less amenable to conventional financial and accounting indicators. The aims of innovation projects may evolve over time, leading to different outcomes from those initially expected. IBM's Nic Donofrio, who provided advice to the Review, points out that the innovation process itself is complex and changing in unpredictable ways, and involves new skills, technologies and organisational structures. He points particularly to Web 2.0 technologies increasing social networking and the extent of engagement of users in producing innovations.<sup>2</sup>

In the past however, the overwhelming focus of Australia's innovation policy has been to increase the supply and commercialisation of research, scientific discovery and technological advances.

Relatively little attention has been paid to policies for improving the capacity of firms to absorb and apply the products of this increased supply of science and research, nor of understanding how the needs of markets and customers are served and the productivity effects are secured for the Australian community.

<sup>1</sup> CSIRO workshop on Services Innovation, 4 February 2008

<sup>2</sup> This point was also stressed in a presentation to the Review by the Boston Consulting Group, and by Peter Williams of Deloitte in Submission no. 598.

Innovation is not just about initial discovery; it is also about learning – learning by doing, learning by applying technology and equipment and learning by interacting with others. The greatest benefits of innovation are activated when firms create a competitive advantage by perceiving and discovering new and better business offerings that provide a solution someone is prepared to pay for.

It is crucial to understand better how innovation works at the level of the firm and in particular, how firms acquire, absorb and apply knowledge from all sources (from science and research as well as from markets and customers) to provide novel, distinctive and valued business offerings, and continually being able to do this as conditions and circumstances change.

Such business innovation involves competency-building and learning by firms. More than just entrepreneurial flair, it requires proficiency in sustaining the everyday business systems and management competencies to bring products and services to market and continually improving business offerings in response to market changes.

Mark Dodgson of the University of Queensland has identified the broad range of strategic, operational and integrative capabilities required to lead innovative businesses as:

### **Strategic and leadership competencies**

- ability to respond to changes in the market environment;
- clearly communicating strategic intent and articulating the need for change through innovation;
- nurturing innovative capacity and creativity throughout the organization;
- crystallising the value that innovation can deliver, and being open to alternative business models;
- openness to learning from failure; and
- thinking and acting from a global perspective.

### **Operational competencies**

- evaluating innovation opportunities using formal methods for their analysis, valuation and selection, including market research and risk assessment;
- identifying the challenges in managing innovative activities, acquiring tools to make processes more systematic, and configuring the resources need to support them;

- reducing the cycle time and cost of innovation by simulating, modeling and using virtual and rapid prototyping;
- creating value from design;
- encouraging employee innovativeness through incentives and rewards;
- protecting intellectual property appropriately; and
- auditing and measuring innovation performance in a meaningful way, including the option values it creates.

### **Integrative**

- collaborating effectively with partners, customers and suppliers in the creation and delivery of innovation;
- complying with and developing regulatory frameworks, technical standards and environmental requirements; and
- brokering knowledge on innovation across organisational, professional and disciplinary boundaries.

Success rests on deliberate and long-term strategies that support investment in an enterprise's tangible and intangible assets. Most important here are training and skills acquisition, risk management, recruitment, organisational design, technology transfer, sales and marketing proficiency and specific production and managerial capabilities.

Innovation thus needs to be understood as neither just new products and technologies, nor creativity and entrepreneurship. The essence of innovation in practice is creating new value by market-facing business transformation.

### **Resetting innovation policy**

The focus of Australia's innovation policy needs to be on the value generated from innovation that supports business engagement with customers and markets, and, in particular, initiatives that foster capabilities for business transformation and problem-solving for customers.

Australia's innovation policy needs to balance investment in increasing the supply of knowledge from science and research with increasing the capacity of Australian enterprises to receive, absorb and take up such knowledge.

An example of this flows from the asymmetry of knowledge. It is not uncommon that two firms could enhance their joint value by combining their ideas and information but do not do so either because they are not aware of the other's knowledge,

or the risk involved in revealing their own information to another party is too great. This can be overcome through the use, for example, of trusted intermediaries, a concept that grew out of the open innovation work in the US<sup>1</sup>. The practice is now being exported to other parts of the world in a broadening network of genuine operational innovation. Exposing more firms to this sort of service, and mindset, could have significant value for the nation as well as the firms.

Submissions by the New Zealand Government to the Review<sup>2</sup>, particularly a paper by New Zealand Treasury, *Innovation and Productivity: Using Bright Ideas to Work Smarter* make the case for the centrality of the firm to innovation and for framing national innovation policies with this in mind:

*Innovating firms are the key institution for translating knowledge into national economic success and ... in order to raise productivity by a significant margin (a country) needs a large number of firms to raise their performance through smart new product offerings, better technology, the use of more skilled workers and improved organisational and human resource practices.*

Consequently, the key actions required to make business innovation a priority in Australia's innovation system are three-fold:

- to reset Australia's innovation policy to foster a critical mass of Australian firms with the skills and capabilities to make innovation a decisive business strategy;
- to provide additional resources to innovation support programs designed to increase the innovation competencies of business enterprises at the point of engagement with customers and markets and to create opportunities for innovation through knowledge-sharing and collaboration; and
- to better recognise, understand and measure Australia's business innovation performance and the productivity outcomes captured as a result.

<sup>1</sup> The concept and was first made operational in Australia through the InnovationXchange

<sup>2</sup> New Zealand Government - Submission no. 257

*Recommendation 3.1: Support business innovation as an explicit priority for Australia's innovation policy by incorporating the following objectives into programs aimed at building business innovation capacity:*

- *assist the generation and absorption of business knowledge by private firms;*
- *help private firms to secure returns and to appropriate value from undertaking inherently uncertain innovative business activities;*
- *foster the capacity for innovation at the company level in response to market and customer demands;*
- *facilitate economically useful connections between firms and other institutions for knowledge transfer and capability building;*
- *extend the global reach and market access of Australian firms; and*
- *increase the managerial, technical and collaboration skills and competencies of private firms.*

*Recommendation 3.2: Extend the Enterprise Connect program to include services firms and expand it to provide explicit business innovation services in conjunction with the existing business review and advisory services.*

This new element of Enterprise Connect, the Innovating Enterprises program, would address the Australian Government's stated objective for Enterprise Connect to build a network that is part of the innovation system.

*Recommendation 3.3: Establish a new Knowledge Connections program within the Enterprise Connect Program, to work with Industry Innovation Councils in facilitating new connections and clusters crucial to the competitive advantage of firms in knowledge-based economies.*