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Using continuous improvement and innovation principles for strategic planning in a government department

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Abstract

Continuous Improvement and Innovation (CI&I) is both a management process and a management strategy. In this paper, we describe how CI&I principles have been used in a strategic planning context by the research economist group in the NSW Department of Primary Industries. We provide some background on the development of CI&I as a management concept and describe the steps involved in implementing the CI&I process in this context. We conclude with some observations about the usefulness of this approach for strategic planning in a government department.

Keywords

Continuous improvement and innovation; process; strategic planning; action design.

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Using continuous improvement and innovation principles for strategic planning in a government department

Over the past decade and perhaps longer, economics research groups in government departments and universities with an interest in agriculture have been forced to think strategically about the direction of their research and how they use their resources. Pressures for change have come from both diminishing resources and a broadening of focus from agriculture to resources management generally. In some situations the departure of the 'baby boomer' cohort is leaving gaps in experience and leadership. Here we report the use within the economics research group in the NSW Department of Primary Industries (NSW DPI) of the continuous improvement and innovation approach to help plan the strategic direction of the group. A key feature of the process has been its inclusive nature which has meant that issues overlooked by senior members of the group have gained proper acceptance.

Economics Research in NSW DPI

The NSW DPI remains a major provider of research, advisory and regulatory services to primary industries in NSW, employing in recent years about 3,500 staff in 130 locations. Research services have been provided by the Science and Research (S&R) Division wherein scientists operate in 6 Branches and 28 Units (see <http://www.dpi.nsw.gov.au/research>).

Economics research services have been provided by 9 permanent economists funded by NSW DPI and a variable number of industry funded temporary economists². Research economists are not located together in a disciplinary group but are attached to Units within S&R, primarily at regional research centres, with an expectation that they can operate across a number of Units to meet high priority needs. While research economists are located in S&R some of their activities, such as the enterprise budgets and farming systems reports, have strong extension components and extension officers have contributed strongly to model building and impact assessment work, often as joint authors. Most research economists have good farm management skills.

They are promoted as scientists on the basis of scientific output. This requires continuing investment in professional development and an ongoing balancing by economists and their managers of the sometimes conflicting demands for routine economic support and a program of economics research meeting requirements for promotion. The leadership and mentoring by senior members of the research economist group has been a key element in fostering professional development within the group.

One of the strongest attractions of this model is that research economists are located within multidisciplinary teams and this has provided opportunities to bring an economic perspective to NSW DPI research and advisory programs. In particular it has led physical scientists to think more carefully about the impact of their research, about who the beneficiaries are, about how it should be funded and about how it fits within NSW DPI priorities. This perspective has often led to increased external funding. This model is strongly supported by these scientists, particularly in the Units where economists are located, because of the access it provides them to economics support.

² A similar number of economists engaged largely in policy analysis and development are located in the Strategy, Policy and Communications Division of NSW DPI.

This model has been working well. The research economist group in NSW DPI is a highly qualified and highly productive team whose outputs are published in a range of international journals, Departmental reports and industry and advisory outlets (see listings in Mullen and Vere 2003; Mullen 2004). Since 1997, the group has jointly published more than 200 refereed journal papers and book chapters, presented more than 300 conference papers and written more than 140 detailed research reports. Research economists are currently bringing in almost \$1.8m in external funding which exceeds their in-kind contributions to these projects. This funding is currently being used to support just over 3 FTEs conducting research not only to meet the requirements of external funders but also to conduct research consistent with DPI goals that could not otherwise have been undertaken.

Most of the group have postgraduate research qualifications and many have successfully applied for promotion into the Research Scientist grade. Their contributions are highly valued by the Department and they have an enviable reputation within the broader profession for the quality of the economics research they undertake. Their set of skills and experience have been recognised by all the major R&D Corporations, the Australian Research Council and the Australian Centre for International Agricultural Research, who have supported economics research in NSW DPI over many years. NSW DPI's research economists also make key contributions to the beef, sheep, weeds, cotton, future farms and invasive animals Cooperative Research Centres (CRCs). Several have adjunct appointments at the level of full or associate professor with the University of New England, University of Sydney and Charles Sturt University, where they supervise graduate students. NSW DPI research economists also supervise graduate students at Monash University, the University of Melbourne, the University of Sydney, Charles Sturt University and the University of New England. Members of the group strongly support professional organisations, and several have or currently hold leadership roles in the *Australian Agricultural and Resource Economics Society* (AARES) or have had responsibility for editing journals or sitting on editorial boards.

Research economists in NSW DPI work across three broad areas:

- First, they provide economic support to research and advisory programs in NSW DPI in the form of economic information, benchmarking the performance of projects, programs, enterprises, industries and farming- and eco-systems, at international, national, state, catchment, resource and farm levels. The enterprise budgets published on the NSW DPI website are one example of this work (<http://www.dpi.nsw.gov.au/agriculture/farm-business/budgets>). This work is highly valued by staff and clients of NSW DPI and is an important building block for more advanced research, but generally is not regarded as scientific output.
- Second, they analyse the economic, environmental and social impacts of alternative technologies and resource-management strategies for major production systems in the agricultural, fisheries and forestry industries of NSW. There are opportunities here for the application of sophisticated programming and econometric methodologies as required.
- Third, they are engaged in processes to inform S&R priority setting and accountability reporting involving the skilled application of benefit-cost principles within a public research and extension provider environment. Typically, this has involved assessing returns to research and extension for projects, programs and sectors, from the perspective of the industry and the community.

Much of this research is reported in the group's refereed Economic Research Report (ERR) series (which now has 41 issues available at

<http://www.dpi.nsw.gov.au/research/areas/health-science/economics-research/reports>)

Even though research economists work independently, and are locally managed by their respective Research Leaders, they also design, plan and implement research projects that have common themes and objectives. Examples include developing a common set of farming-systems models for the major NSW agricultural regions, developing a common understanding of environmental values, and undertaking assessments of the economic, environmental and social impacts of NSW DPI investments in Research and Extension programs in a common format and using common assumptions, all reported in the ERR series.

However, despite its good recent track record, this model is difficult to manage. Weaknesses of the model are the risk that economists might be 'captured' by the interests of their Units or of their major funding sources, focusing on narrow industry or technical issues and being unresponsive to or even unaware of, higher priorities in S&R and NSW DPI more generally. Another weakness of this model is the threat to professional development through indifference and reduced opportunities for specialisation.

The Research Leader, Economics Research in managing against these potential drawbacks, leads and coordinates the research economists in the different Units by:

- being involved in each individual annual performance assessment and work-planning session;
- negotiating resource issues and work plans with senior management;
- seeking and offering professional development opportunities; and
- planning and leading biannual workshops where all the research economists meet to discuss departmental and industry issues, methods and techniques for solving a range of economic problems, and training and progression opportunities.

Senior members of the economics research group also play a key role in providing professional leadership and mentoring to the group.

Why Use CI&I in the Research Economist Group?

A continuing process of downsizing has coalesced with an age structure in the economics research group where several members in the group are approaching or have reached 60 in recent years. This threatens the ability of the economics research group to coordinate its limited resources to meet the higher level priorities of S&R and NSW DPI for economics research, to undertake high quality and publishable economics research and to take up professional development opportunities.

Particular facets of this problem include:

- A reduced capacity to provide high quality economics research services;
- The loss of capacity is concentrated amongst the most experienced in the group. By the end of 2009, several senior members of the group are likely to have left, with firm succession plans in place for few of these positions. This loss is disruptive of existing commitments for economics research both to internal and external clients and provides a challenge to those remaining in meeting these commitments. Ongoing financial support for temporary research economists is likely to be compromised. Further, there is a real threat to the ability of the group to continue professional

- development as research economists because of the loss of leadership and mentoring, and the demands for economic support falling on a smaller group; and
- Changes in the leadership group in S&R and in the research economist group mean that careful attention has to be paid to ensuring that the role of research economists in S&R can be articulated by the group and understood by the Research Leaders and senior managers in S&R.

The challenge for the research economist group has been to develop a strategy to ensure that the group continues to meet the needs of S&R (and DPI) for economics research both at Unit and Division levels, while maintaining a culture of professional development and mentoring which encourages promotion as research scientists.

Over the past few biannual research economist workshops, these issues have been canvassed widely. Following a presentation at the September 2007 workshop (Griffith *et al.* 2007), a decision was taken to use a formal Continuous Improvement and Innovation (CI&I) process for strategic thinking about what the research economist group might look like in the medium term and what the group itself can do to maintain its relevance to S&R and its capacity for professional development. The CI&I process has been used to good effect in the CRC for Beef Genetic Technologies both to accelerate the adoption of new technology across the beef industry and to manage the CRC project (Griffith 2008), so it was decided to give it a try in this strategic planning context.

What is Continuous Improvement and Continuous Innovation?

There is some debate about when the first recognised, concerted continuous improvement effort occurred. Schroeder and Robinson (1991) claim the first modern continuous improvement program occurred in 1894 in the United States at National Cash Register, while Radawski (1999) states that continuous improvement has its origins at Bell Laboratories in the 1930s. According to Imai (1986) the form of continuous improvement called 'kaizen' was developed in Japan in the 1940s (Ishikawa 1985; Deming 1986, 1993). It is well-known that the Toyota Motor Company is a committed practitioner of continuous improvement principles.

Whoever is correct, continuous improvement has at least a 70-year history, has been built on tried and tested approaches (Radawski 1999), and has been applied in a wide range of contexts. Clark, Timms and Griffith (2008, Table 3.1) provide a partial list of 52 recent examples of the application of continuous improvement programs across seven different sectors of the economy. There are now a number of academic texts and a range of international peer-reviewed journals dedicated to the principles and practice of continuous improvement. Clark (2008) provides a valuable summary of the concepts, principles, processes, tools and techniques associated with continuous improvement.

A number of authors propose that innovation is also integral to both the concept and process of continuous improvement (Anderson, Rungtusanatham and Schroeder 1994; Winter 1994; Bessant 2003; Bessant and Francis 1999, 2005). Bessant and Francis (1999) define continuous improvement as an organisation-wide or system-wide process of focused and sustained incremental innovation. Shortell (1995) argues that culture either inhibits or supports continuous improvement, and that a culture that fosters openness, collaboration, teamwork and learning from mistakes is optimal for sustaining improvement and innovation.

Thus, there is an inextricable link between continuous improvement and continuous innovation.

Continuous innovation is incremental and takes place within existing infrastructures. It builds on existing knowledge in existing markets without challenging underlying strategies or assumptions. Continuous innovation is characterised by convergent thinking - progressive refinements, sharper focus, and therefore increasing specialisation (Miller and Morris 1999). Continuous innovations are easier to achieve, as they draw on the existing market framework, infrastructure, and tacit knowledge of customers, suppliers and other stakeholders. As they are more narrowly and incrementally focused, they do not require conceptual leaps, massive amounts of new knowledge, nor the huge risks that accompany dealing with the unknown. Hence, they are also more comfortable innovation targets (Miller and Morris 1999). The traditional view of innovation as simply R&D is no longer considered to be appropriate (Albury 2005; Business Council of Australia 2006; Gilbertson 2002; Hartley 2005; Innovation Summit Working Groups 1999; Moore 2005; Rogers 1995).

The concepts and outcomes of “Continuous Improvement” and “Continuous Innovation” were combined into one process, the Continuous Improvement and Innovation process (CI&I), and described by Clark and Timms (1999). The essence of CI&I is a process for ‘focussing thinking and action for impact on performance’. CI&I can be thought of as both a management process and a management strategy. Relating the concept to businesses, Terziovski and Samson (2000) found the adoption of a CI&I management strategy to be one of the most significant predictors of high performance in small to medium sized enterprises.

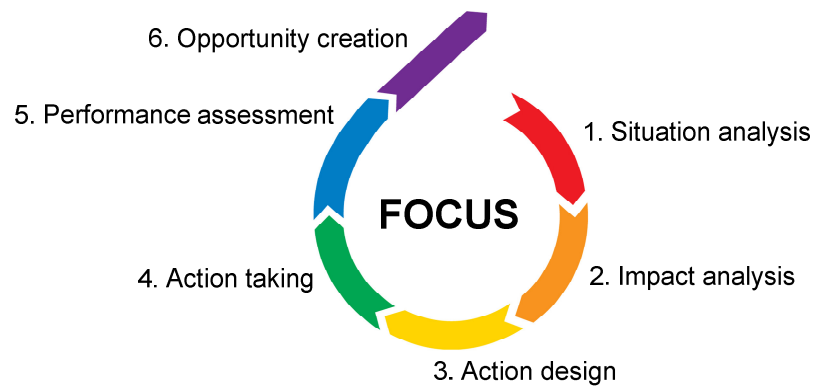
The Six Stages in Continuous Improvement and Innovation

For effective and efficient continuous improvement in teams, organisations, networks and partnerships, it is essential that the continuous improvement process (and its methods, tools and technologies) is a ‘shared process’ (Eidt 1992; Montana 1992; Rounthwaite and Shell 1995). The shared process of CI&I commonly used is described in Timms and Clark (2007) and is represented by the diagram shown in Figure 1. The CI&I process recognises that individuals are dealing with a unique situation requiring unique decisions to improve the situation. Therefore, the process is specifically designed to be used by individuals in teams, partnerships, networks and organisations³.

Focus – this is the first component of any CI&I process. “Focusing” thinking and action means identifying a clear need for improvement, choosing boundaries in which to concentrate effort, and setting the specific target outcomes required to meet the need. A clear, shared and agreed focus can save time, effort, money and other resources.

Figure 1. The six key stages of CI&I designed to achieve improvements and innovations

³ There are a number of alternative methodologies for achieving these same objectives. Clark, Timms and Griffith (2008, Table 3.3) provide a comparison between CI&I and other approaches based on key attributes, design features, outputs and outcomes. There are also a large range of tools that can be applied at each stage of the CI&I process. Some of these are listed in Clark, Timms and Griffith (2008, Table 3.2).



The most important thing about a focus is that it should be SMARTT:

Specific,
Measurable,
Achievable,
Relevant,
Targeted and
Time-lined.

The Focus influences all aspects of the CI&I process.

Situation Analysis – the purpose of this first stage is to analyse a context or situation in relation to the Focus and identify opportunities for improvement. Constraints, issues and problems can all be rethought of as opportunities for improvement. At the end of a Situation Analysis there will be a list of opportunities for improvement.

Impact Analysis – here the opportunities developed in the Situation Analysis are analysed or evaluated to determine which ones to take forward to action. An effective Impact Analysis will help ensure resources are only invested in those opportunities that will have most effect or payoff and avoid investing in opportunities that are beyond the group’s control.

Action Design – in CI&I the need to “design” action is emphasised. Design is about doing things differently, or doing different things, to achieve the focus and targets. Action design includes specifying Critical Success Factors (CSFs) and Key Performance Indicators (KPIs).

Action Implementation – There are three important components to this step: monitoring actions and results, regular feedback to stay on track, and support to maintain momentum and motivation. While partnerships can agreed on and plan joint actions to achieve target outcomes, it is individual partners who actually take those actions. Thus individuals have to develop their own action plans for what they wish to achieve, as a way of contributing towards the broader partnership focus and target outcomes.

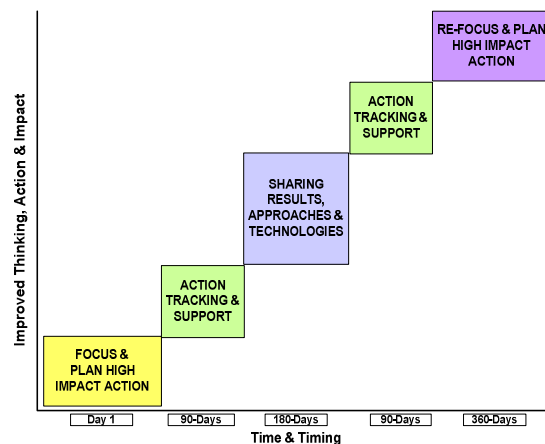
Performance Assessment – This step involves analysing and interpreting the results achieved, and not achieved, in relation to the Focus and target outcomes. It also involves assessing which methods worked well and which did not. Performance Assessment is made easier if specific KPIs are established during Action Design and monitored during Action Implementation.

Creation and Synthesis – the last of the six key stages of the CI&I process is Creation and Synthesis. This involves two components: creating new questions and ideas about achieving improvement, and using the results from the Performance Assessment and the creative thinking to synthesise specific opportunities for improvements and innovations into the future.

Re-Focus – each time the process is completed a new situation has been created from which different improvements and innovations are possible.

In line with the overall focus to achieve results within a specified time frame and the need for partners to maintain interest and motivation, that the partnership should meet at least every 90 days to follow the CI&I steps described in Figure 1 above. Thus, teams are encouraged to meet, share results and support each other regularly (30, 90 & 180 days) (Figure 2).

Figure 2. Suggested partnership schedule



CI&I has most often been applied to improving enterprise and organisation performance in manufacturing industries, where there is a strong and direct focus on business productivity and profitability. However, it is now being increasingly applied to improving the thinking and actions of individuals, partnerships and networks in a wide range of contexts, including in agriculture (see for example Clark, Griffith, Madzivhandila, Nengovhela and Timms 2008; Griffith 2008; Madzivhandila, Nengovhela, Clark, Griffith and Timms 2008; Timms, Clark, Griffith, Madzivhandila and Nengovhela 2008), and in Government provision of health and community services (see for example Bunning 1992; Swiss 1992; Offner 1993; Smith 1993a, 1993b; Morgan and Murgatroyd 1994; Anschutz 1995; Kaboolian 2000; Fryer, Antony and Douglas 2007).

In most of these applications, the focus is more generally on total quality management of the provision of public sector goods and services. In other instances, there is an explicit focus on continuous improvement. One example is the Victorian Public Service Continuous Improvement Network (VPSCIN) (<http://www.vpsc.in.org>). This is a whole of government network sponsored by the State Coordination and Management Council and includes around 3000 members across the Victorian Public Sector. The purpose of the network is to encourage and promote continuous improvement thinking, leadership and practice, and in doing so help build a more effective and agile Public Sector. Another example occurs in the Queensland

Department of Primary Industries where there is an organisational unit with an explicit focus on promoting and implementing the principles of CI&I into the provision of services by the Department.

However, there are few examples of the use of the CI&I process to better manage projects and programs (see Clark, Timms, Parnell and Griffith 2008), and none that we are aware of where CI&I principles have been used for strategic planning within a government Department.

Implementing CI&I in a Strategic Planning Context within the Research Economist Group

The nature of the research economist group influenced the choices made about how CI&I was implemented. First, all research economists work on a range of research projects either individually or as members of teams. CI&I can be implemented in any one of these projects. However the group chose to confine the application of CI&I in this instance to the strategic planning associated with the role of the research economist group collectively within S&R.

Second, research economists are dispersed across the State but meet biannually. We chose to implement the CI&I process over several of our regular workshops rather than more intensively, such as at a single workshop. The choice was prompted by an intention to engender quality participation over an extended period for a group with little previous exposure to CI&I. Hence we have been spending about half a day on CI&I in workshops running over two days. The group was introduced to CI&I at a workshop in September 2007 (Griffith *et al.* 2007).

We had meetings in June and October 2008. Currently we are at the action design and action taking stages and we expect to get through the cycle during 2009. Of course at each meeting there has already been recycling and revamping of previous work.

Strategic Priorities in S&R in NSW DPI

The strategic priorities for research within S&R identified in 2008 are:

- Climate change
- Water management
- Biosecurity, and
- Food security and productivity

These priorities have informed the thinking of the group, although so far in developing themes, opportunities and action plans under CI&I processes, they have been referred to collectively rather than individually. No doubt as the process moves forward the economics research group will take stock of whether the action plans of individuals across the group adequately responds to the needs for economics research for individual S&R priorities.

Defining a Focus

A key step is to define a focus for the group. The difficulties of defining a SMART focus for a research group in the public sector have already been alluded to. It is difficult to define outcomes in measurable time bound terms. As a starting point, the Research Leader, Economics Research outlined his expectations about what the group of 9 NSW DPI-funded

positions should aim to achieve in terms of annual measurable outputs over the next few years:

- Publish 15 papers in refereed economics journals;
- Present 15 conference papers;
- Employ 5 research assistants on industry funds;
- Publish crop budgets in 3 zones annually and livestock budgets biannually;
- Raise \$500,000 in industry funds;
- Conduct 4 evaluations of NSW DPI R&D investments and assist in applying NSW DPI's investment framework;
- Maintain skills in farm management, econometrics, benefit-cost analysis, impact assessment of R&D, demand and supply response, simulation modelling, etc.

While a Focus of this nature is measurable and time bound, it is framed in terms of outputs rather than outcomes and the risk is actions can be taken to achieve output goals that do little to achieving outcomes goals. A more outcome oriented Focus was accepted at the October meeting:

'A measurable improvement each year in the capacity of the group to deliver relevant, credible and timely information for internal and external clients, based on independent economics research.'

The weakness of this Focus is that the outcomes are difficult to measure objectively. There is more work to be done here. Perhaps 'relevant, credible and timely information' could more explicitly refer to the 4 strategic priorities in S&R in later versions. However the intention has been to think about how the research economist group operates in general terms within S&R whatever the priorities.

The agreed group Target Outcomes attached to this Focus were as follows:

- Improved capacity and capability to deliver valued economic information;
- Closer alignment of work programs with NSW DPI key strategy areas;
- More responsive and adaptive work programs to meet emerging priority issues;
- More supportive and communicative network of economists; and
- Sufficient staff and financial resources to meet client needs.

Identifying Opportunities for Improvement

To identify opportunities for improvement, a CI&I tool known as the 'inverse thinking' tool was used addressing the question "How do we ensure the research economics group *does not* succeed in the future?" Each member of the group was asked to write down five situations which would threaten the viability of the group. Apparently reporting these threats runs the risk of giving a perception that the organisation is being criticised and so we have grouped the responses and converted them into six theme opportunities, the final outcome from this tool.

Once the list of opportunities for improvement was developed, the 'impact and influence' tool was used to filter out those opportunities by theme area, where individual members had little influence on making a change, or where a change, if implemented, would have little impact on the goals for the group. Each member of the group assigned a value of 0 (no impact or influence) to 10 (substantial impact or influence) for each of the six theme areas. The scores were averaged as shown in Table 1, and then graphed as shown in Figure 3 and Figure 4.

Table 1. Impact and Influence Scores

Opportunity	Continuity of funding	Succession planning	Strategic alignment	Comm.	Time Conflicts	Skills & Experience
Average Impact	7.56	7.44	7.67	6.22	6.56	8.67
Average Influence	4.89	2.89	5.11	5.78	4.78	4.89

Figure 3. Impact and Influence Diagram

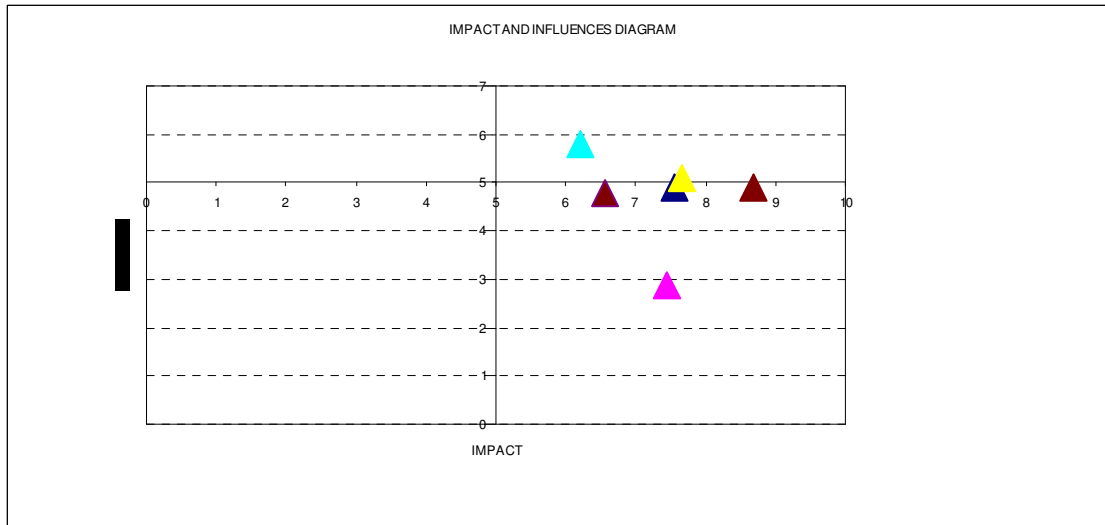
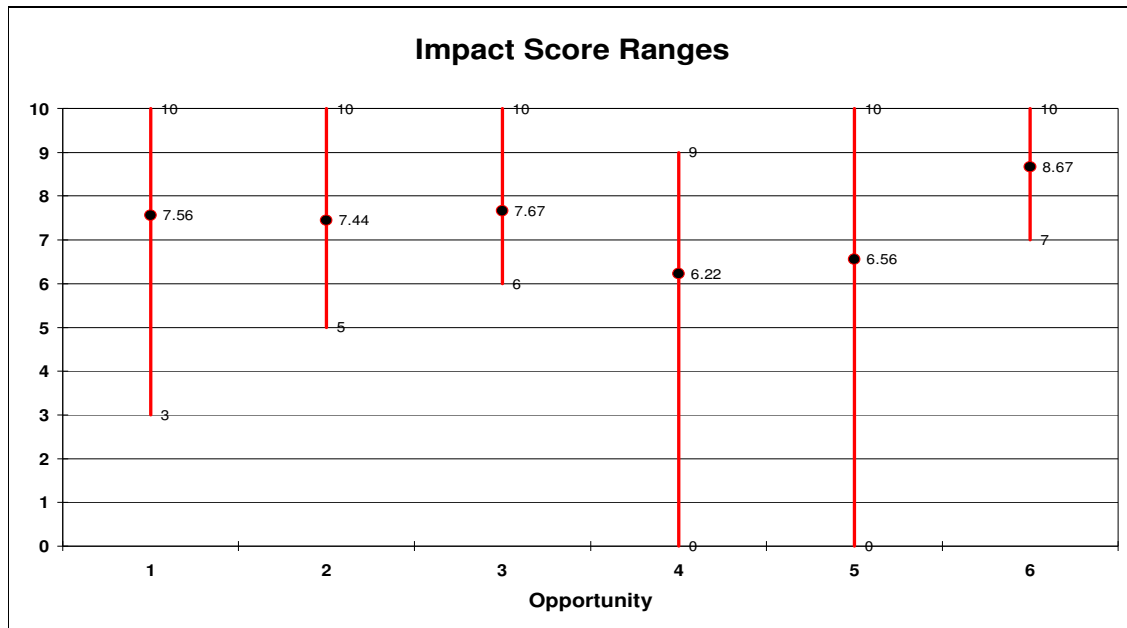
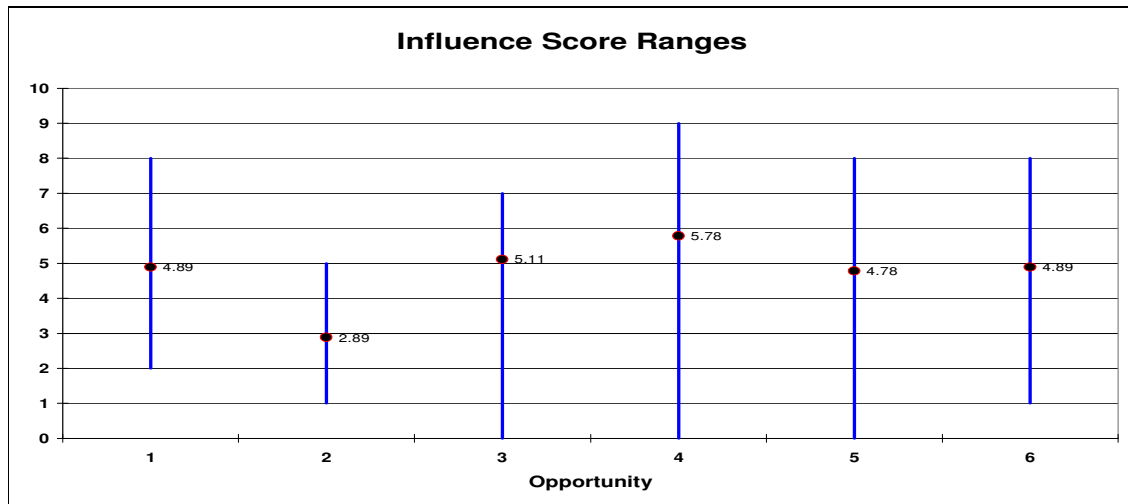


Figure 4. Impact and Influence Ranges





In terms of the average scores, all theme areas rated high for potential impact but only two themes, strategic alignment and communication, ranked high for ability to influence, although three others were borderline. In terms of the range of scores, two themes showed wide ranges for both impact and influence, which showed the divergence of views about these themes.

The opportunity about succession planning was excluded from future consideration on the basis of the low average influence score, the quite tight range of scores and the fact that no individual member of the group rated it above 5. The other five opportunities were carried forward for further investigation but at the October 2008 workshop these were reduced to four to avoid overlap.

The final four theme areas were condensed to:

- Communication;
- Skills and Experience;
- Strategic Planning and Alignment; and
- Time Commitments.

Designing Action Plans

The group is now in the process of developing Action Plans for these four themes and this requires the identification of Critical Success Factors (CSFs), Key Performance Indicators (KPIs) and Key Actions.

These agreed Action Designs for each theme are a formal statement of how the research economist group expects to achieve and hence to improve the way it functions and contributes to the broader NSW DPI priorities and strategies. The agreed Action Design for the strategic planning and alignment theme is given in Table 2. From this table it can be seen that specific CSFs, KPIs and Actions have been identified which the group must meet if it is to achieve its goal of a closer alignment with S&R through its provision of an economic perspective to the use of research and extension resources in NSW DPI. Going through this formal process has clarified the responsibilities of individual economists to group responsibilities.

Table 2. Action Design Framework for the Strategic Planning and Alignment Theme

Focus: Strategic Planning and Alignment		
Research economist group provides an economic perspective to strategic planning with respect to the use of research and extension resources in NSW DPI		
Critical Success Factors	Key Performance Indicators	Key Actions
What things are absolutely necessary for success	How will we know we have these things in place	What do we have to do to ensure success and when
Research economist group is more aware of NSW DPI research priorities	<ul style="list-style-type: none"> • Workplans and monthly reports structured around NSW DPI priorities 	<ul style="list-style-type: none"> • Research Leaders/Managers provide a summary of current issues at each 6-monthly meeting
Research economist group better contributes to priority setting processes in NSW DPI	<ul style="list-style-type: none"> • S&R framework for investment processes adopted at Unit level • Framework for investment questions included in project approval process 	<ul style="list-style-type: none"> • Group drafts a revised pro forma and presents to S&R management • Group negotiates with selected Branches and Units
Research economist group contributes to S&R discussion papers on four priority areas	<ul style="list-style-type: none"> • Representatives of the group contribute to Situation Papers 	<ul style="list-style-type: none"> • Identify representative economists to relevant Directors
Research economist group assists NSW DPI in meeting accountability requirements	<ul style="list-style-type: none"> • Members complete 4 impact assessments each year 	<ul style="list-style-type: none"> • Members and Research Leaders identify and agree on areas of RD&E investment to be assessed
Research economist group assists S&R in developing strategic alignments with other economic research and policy development groups within and outside NSW DPI	<ul style="list-style-type: none"> • Better alignment of group workplans with NSW DPI and external groups 	<ul style="list-style-type: none"> • Members liaise with internal and external partners
Research economist group assists S&R in securing project funding from other economic research and policy development groups within and outside NSW DPI	<ul style="list-style-type: none"> • Mechanism in place to review opportunities • Number of applications made • Number and total value of external funds attracted • Number of internally funded positions 	<ul style="list-style-type: none"> • Members review opportunities and priorities and select target fund • Members apply for project funding and commence project if successful
Research economist group is responsive and adaptive to emerging priority research issues	<ul style="list-style-type: none"> • Representatives of the group contribute to strategic planning of staff resources at least annually 	<ul style="list-style-type: none"> • Members keep abreast of emerging priority research issues relevant to NSW DPI, prepare short summaries and add to a list on a shared web site

Where to From Here?

Members of the research economist group are now designing their individual action plans, for the CSFs that they have some ability to influence, and that accord with the agreed group focus, target outcomes and action plans. So for example, each research economist will take Table 2 and adapt it to their situation, identify those CSFs to which they currently contribute and what this contribution is (action). These individual action plans will be reported at the next biannual meeting in March/April 2009 for feedback, comment and support. A consolidated list of the individual action plans will also be constructed to check whether any elements of the overall group design have been missed, and if so, whether it requires improvement. In particular the group will take stock of the economics research support provided to each of the four strategic priorities to ensure rational allocation of the groups' resources.

Over time it is hoped that this CI&I approach to better designing and implementing actions that have an overt focus on improving the contribution of the research economist group to NSW DPI strategies and priorities can be integrated into the agency-wide performance assessment and work-planning processes that guide all staff members.

Conclusions

The CI&I process is now being increasingly applied to improving thinking and actions in a wide range of contexts, including Government services. However it remains true that it was originally designed to be used, and has been used most often, for improving enterprise and organisation performance in manufacturing industries, where there is a strong and direct focus on business productivity and profitability. Applying it in a strategic planning context within the research economist group in NSW DPI has been difficult.

Some of the issues that have arisen include:

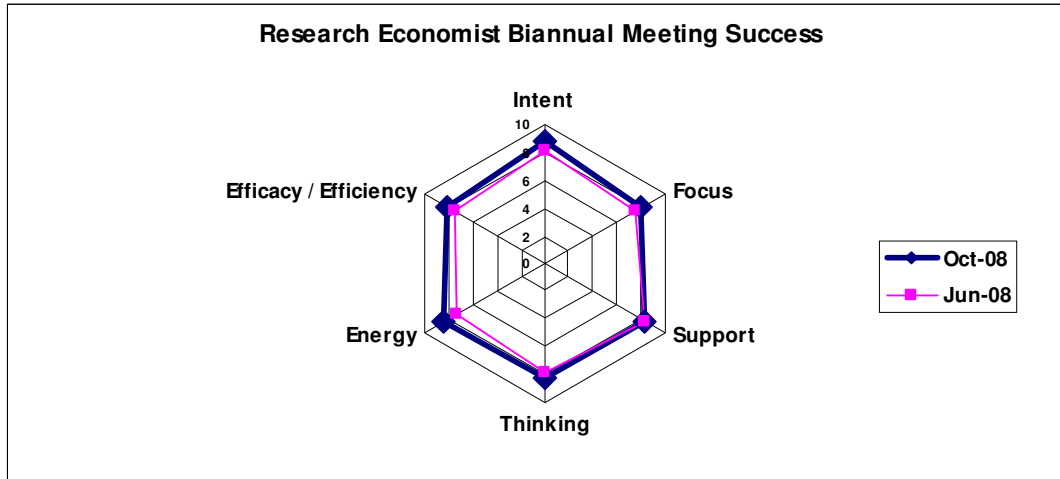
- The research economist group was essentially unfamiliar with the CI&I methodology at the start of this process and there was little time or other resources to engage in any formal capacity-building. This meant that progress towards the individual action plans was slow;
- In particular, for people who have been trained as scientists, the idea that different group members could contribute to the overall focus in different ways, at different levels and at different times, was quite confronting. This meant that the concept of partnership had to be reviewed frequently, and hence that progress was slow;
- The group consists of a range of individuals with differing levels of skills, experience, employment status, and responsibilities both within and outside of NSW DPI. This meant that there were often differences of opinion about overall targets and objectives of the exercise;
- The group wanted to confine attention and effort to those improvements and innovations that could be made when working as a group, that is, on those research projects that have common themes and objectives. This meant that there were often perceived conflicts between what were the objectives of the group and what were the objectives when working as individual economists, especially when this meant being part of larger teams of other research or advisory staff.
- The group found it difficult to define a Focus that was truly SMARTT. This is probably because the group is producing public goods and services which are difficult to value. This means that the group should be reviewing some of the emerging public sector CI&I literature for goals and how to value public good outcomes.

However, in spite of these difficulties, in our view significant progress has been made. In particular, even though we could not define a precise SMARTT focus, the process seems to have worked so far. Further, the evaluation of the two most recent biannual meetings of the research economist group (Figure 5), where there was a heavy workload on using the CI&I process to develop meaningful individual action designs, showed that all participants liked and appreciated the concept, and that this appreciation has grown over time as the group members have become more comfortable with the concepts and the process.

An important outcome of the process will be that all individuals within the group will have a much clearer appreciation of their contribution to the collective outcomes of the group and will be better able to articulate the role of economics research in meeting the

priorities of S&R and NSW DPI. This is a significant outcome at a time when the leadership of the group is changing. Less senior members of the group have made strong contributions to identifying neglected facets of how the group communicates and functions and meets their demands for professional development.

Figure 5. Measures of Meeting Success, NSW DPI Research Economist Biannual Meeting, June and October 2008



References

- Albury D (2005), 'Fostering innovation in public services', *Public Money and Management*, 25 (1): 51-56.
- Anderson JC, Rungtusanatham M and Schroeder RG (1994), 'A theory of quality management underlying the Deming management method', *Academy of Management Review*, 19 (3): 472-509.
- Anschutz EE (1995), 'A point of view: TQM: the public sector challenge', *National Productivity Review*, 15 (1): 1-6.
- Bessant J (2003), *High Involvement Innovation: building and sustaining competitive advantage through continuous change*, John Wiley and Sons, Chichester.
- Bessant J and Francis D (1999), 'Developing strategic continuous improvement capability', *International Journal of Operations and Production Management*, 19 (11): 1106-1119.
- Bessant J and Francis D (2005), 'Transferring soft technologies: exploring adaptive theory', *International Journal of Technology Management and Sustainable Development*, 4 (2): 93-112.
- Bunning C (1992), *Total quality management: applying it in the public sector and to professional services*, International Management Centre, Brisbane.
- Business Council of Australia (2006), *New concepts in innovation: the keys to a growing Australia*, based on a study undertaken by consultants Howard Partners entitled 'Changing paradigms: rethinking innovation policies, practices and programs', Melbourne.
- Clark R (2008), *Sustainable improvement and innovation: designing, leading and managing initiatives to achieve and sustain improvement and innovation in rural systems*, PhD thesis, University of Queensland, St Lucia.

- Clark RA, Griffith GR, Madzivhandila TP, Nengovhela NB and Timms J (2008), 'A model for achieving Sustainable Improvement and Innovation in agricultural research and development interventions for maximizing socio-economic service delivery', Paper presentation number 1, "Intellectual capital for livestock production", 10th World Conference on Animal Production, Cape Town, South Africa, 25 November.
- Clark R and Timms J (eds) (1999), *Enabling continuous improvement and innovation: focused thinking and action for impact on performance*, The Rural Extension Centre, Gatton.
- Clark R, Timms J and Griffith G (2008), 'Paper 3. The Continuous Improvement and Innovation Process', *Australian Farm and Business Management Journal* 5 (1 and 2): 19-27.
- Clark R, Timms J, Parnell P and Griffith G (2008), 'Paper 4. The Sustainable Improvement and Innovation Model', *Australian Farm and Business Management Journal* 5 (1 and 2): 29-32.
- Deming WE (1986), *Out of crisis*, MIT Center for Advanced Engineering Study, Cambridge.
- Deming WE (1993), *The new economics*, MIT Press, Cambridge.
- Eidt CM (1992), 'Applying quality to R&D means 'learn-as-you-go'', *Research Technology Management*, 35 (4): 24-31.
- Fryer KJ, Antony J and Douglas A (2007), 'The critical success factors of continuous improvement in the public sector', *The TQM Magazine*, 19 (5): 497-517.
- Gilbertson D (2002), *Public service innovation concepts*, www.windeaters.co.nz/publications/innovation_entrepreneurship/Public%20Sector%20Innovation%20Concepts.pdf, viewed 14 October 2008.
- Griffith GR (Special Edition Editor) (2008), **Accelerated Adoption through Sustainable Beef Profit Partnerships**, Special Edition of the *Australian Farm and Business Management Journal* 5 (1 and 2): pp. i-iv, 1-129.
- Griffith GR, Parnell PF, Clark RE, Timms J, Mulholland C and Hyland P (2007), 'Continuous Improvement and Innovation: Application in R&D Management', presentation to NSW DPI Research Economist's workshop, UNE Centre, Tamworth, 25 September.
- Hartley J (2005), 'Innovation in governance and public services: past and present', *Public Money and Management*, 25 (1): 27-34.
- Imai M (1986), *Kaizen: the key to Japan's competitive success*, McGraw-Hill Publishing, New York.
- Innovation Summit Working Groups (1999), 'The national innovation summit', *Summary Report of the Innovation Summit Working Groups*, Department of Industry, Science and Resources: Canberra.
- Ishikawa K (1985), *What is total quality control? The Japanese way*, Prentice Hall, Englewood Cliffs.
- Kaboolian L (2000), 'Quality comes to the public sector', in RE Cole and WR Scott (eds), *The quality movement and organization theory*, Sage Publishing, Thousand Oaks, pp. 131-153.
- Madzivhandila TP, Nengovhela NB, Clark RA, Griffith GR and Timms J (2008), "The role of agricultural research and development: The socio-economic development nexus", Poster presentation number 4, "Intellectual capital for livestock production", 10th World Conference on Animal Production, Cape Town, South Africa, 25 November.
- Miller WL and Morris L (1999), *Fourth generation R & D: managing knowledge, technology and innovation*, John Wiley and Sons, New York.
- Montana JA (1992), 'If it isn't perfect, make it better', *Research Technology Management*, 35 (4): 28-41.

- Moore MH (2005), 'Break-through innovations and continuous improvement: two different models of innovative processes in the public sector', *Public Money and Management*, 25 (1): 43-50.
- Morgan C and Murgatroyd S (1994), *Total quality management in the public sector: an international perspective*, Open University Press, Buckingham.
- Mullen JD (2004), *Evaluations in 2003 of Five Areas of Investment by NSW Agriculture: Summary*, Economic Research Report No. 22, NSW Department of Primary Industries, Orange.
- Mullen JD and Vere DT (2003), *Research and Extension Capabilities: Program Economists in New South Wales Agriculture*, Economic Research Report No. 14, NSW Agriculture, Orange.
- Offner R (1993), *Focusing on quality management in the public sectors of Canada, USA and UK: report of a study tour*, Office of Public Management, NSW Premier's Department, Sydney.
- Radawski D (1999), 'Continuous quality improvement: origins, concepts, problems and applications', *Perspective on Physician Assistant Education*, 10 (1): 12-16.
- Rogers EM (1995), *Diffusion of innovations*, 4th ed, The Free Press, New York.
- Rounthwaite T and Shell I (1995), 'Designing quality partnerships', *TQM Magazine*, 7 (1): 54-58.
- Schroeder DM and Robinson AG (1991), 'America's most successful export to Japan: continuous improvement programs', *Sloan Management Review*, 32 (3): 67-81.
- Shortell SM (1995), 'Physician involvement in quality improvement: issues, challenges and recommendations', in D Blumenthal and A Scheck (eds), *Improving clinical practice*, Jossey-Bass, San Francisco, pp. 205-228.
- Smith AK (1993a), 'Total quality management in the public sector: part 1', *Quality Progress*, 26 (6): 45-48.
- Smith AK (1993b), 'Total quality management in the public sector: part 2', *Quality Progress*, 26 (7): 57-62.
- Swiss JE (1992), 'Adapting total quality management (TQM) to government', *Public Administration Review*, 52 (4): 356-362.
- Terziovski M and Samson D (2000), 'The effects of company size on the relationship between TQM and organisational performance', *The International Review of Organisational Improvement*, 12 (2): 144-148.
- Timms J and Clark RA (2007), *Achieving and enabling continuous improvement and innovation: focused thinking and action for rewarding results*, Queensland Department of Primary Industries and Fisheries, Brisbane.
- Timms J, Clark RA, Griffith GR, Madzivhandila TP and Nengovhela NB (2008), "Capacity building in achieving Sustainable Improvement and Innovation: The why, what, how, implications and experiences in the agricultural research and development context", Poster presentation number 5, "Intellectual capital for livestock production", 10th World Conference on Animal Production, Cape Town, South Africa, 25 November.
- Winter SG (1994), 'Organizing for continuous improvement: evolutionary theory meets the quality revolution', in JAC Baum and JV Singh (eds), *Evolutionary dynamics of organizations*, Oxford University Press, New York, pp. 90-108.