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Paper 8. The Research and Development Strategy

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Abstract. Continuous improvement and continuous innovation are used in the service and manufacturing industries, but there is little evidence of their use in the beef production sector. This paper examines the evidence relating to Continuous Innovation and Continuous Improvement and describes a collaborative partnership approach to its implementation in the beef industry. The results indicate that using a facilitated network of businesses can increase the uptake of innovations and improvements in beef businesses. Results also indicate that there is a need to develop facilitators so that they are aware of the impact of innovations and improvements on business profitability and so they can assist managers and business owners to implement short term changes to the businesses.

Keywords: Continuous innovation; improvement; collaboration; partnerships; research; development.

Background

The Research and Development Strategy is designed to identify and develop improved mechanisms and supporting evidence to accelerate improvements and innovations in the Beef Profit Partnerships. These mechanisms include networking activities, practical strategies, systems, models, processes, techniques, tools and technologies integrated with evidence-based practices. The businesses involved in BPP who actively adopt or achieve innovations will be better placed to achieve an additional 5 per cent improvement in annual business growth within two year timeframes through cost reductions or revenue enhancements.

Strategy Priorities and Focuses

Key priorities for the strategy include:

- Identifying, developing and evaluating effective and efficient mechanisms for achieving and accelerating improvements, innovations and adoption in businesses, industry, partnerships and projects;
- Developing and using systems analysis and integration tools for developing partnership models that integrate existing knowledge (qualitative and quantitative) to achieve specific BPP targets;
- Developing an explanatory framework/tool that will identify the drivers and inhibitors of continuous improvement and continuous innovation in the beef industry, beef partnerships and beef businesses; and researching the value of the tool in enhancing continuous improvement and continuous innovation in the beef industry; and
- Establishing an (evidence-based) toolbox of best practices, processes and systems for sustainable improvement and

innovation in beef businesses, supply-chains and partnerships.

These priorities require the development of a team of scholars who can draw together the science underpinning management innovation and the sciences appropriate to improving beef production systems. The postgraduate scholars will build on existing theories and work with a wide range of participants in the beef industry to provide an improved understanding of how organisations and businesses in the beef industry can achieve accelerated levels of innovation that increase the competitiveness of Australian beef suppliers in the global market. This accelerated adoption project has a focus on rapid and continuous improvement and innovation, rather than relying on general communication and awareness activities. There is also a clear focus on building the capacity to understand and implement continuous improvement and continuous innovation, on developing and working within a partnership network, and on developing and providing the tools that allow partners to measure where they are now and to monitor improvements in their business performance over time. The CI&I process helps all partners to scope, analyse, prioritise, achieve, report and support improvements and innovations, and promote the adoption of actions, methods and technologies that have greatest benefit. The process also helps re-focus thinking and action further improvements and innovations. The overall focus of the project is to ensure that beef businesses and facilitators in the BPPS have the R&D needed to support to achieving further improvements and innovations in relation to the target outcomes of their own businesses.

Applying the Underpinning Science

As outlined in Paper 3, there is an extensive literature on innovation, and much of it is regarded as fragmented since scholars from diverse disciplinary backgrounds adopt a variety of philosophies and viewpoints to investigate, analyse and report on a phenomenon that is complex and multidimensional. According to Hyland and Soosay (2008), innovation is the introduction of new and useful products, services, methods, practices or processes that add value to an organisation. It is critical for organisational growth and success, yet it is not easily managed. As competition intensifies, product life cycles shorten and technologies proliferate, the pressure on organisations to innovate has heightened. In beef production systems producers are experiencing intensified competition and pressures to be both more productive and efficient while reducing the impact of their operations on the environment.

However innovation is about change - changing product specifications, changing process and system requirements, changing markets and customers and changing the ways that the business operates. So, while managing effectively and efficiently and increasing productivity is concerned with reducing variation and standardising processes and systems; innovation is about changing those very same things that the business manager or farm owner is attempting to standardise. In this sense, innovation is continually disrupting the operation of a business. These disruptions can be incremental or radical changes to a business; for example incremental changes may see a beef producer gradually improve pastures or introduce a new breed into their breeding program. On the other hand a radical change could be to sell all of the existing cattle and introduce a completely new breed that the farmer believes is better suited to the local conditions.

Radical innovation emphasises a dramatic departure from existing product offerings and processes or their logical extensions. Radical innovation is high-risk and high-return. Uncertainty plagues radical innovation projects, whether this is technical, market, organisational or resource uncertainty. Not all innovation is large scale. Innovation can occur gradually and can involve small improvements to a process, product or service. Incremental innovation that is gradual and consists of small steps can have a significant impact on the competitive position of a business in the market. Many farmers are used to incremental change as

they alter the production systems by making small step, gradual changes in practice to breeding, feeding and care of their animals.

Continuous Improvement

Gradually changing processes and practices is however not a systematic approach to continuous improvement. Continuous Improvement (CI) can be defined as a business wide process of focused and continuous incremental innovation. CI has many attractions, one of the most important being a potential low-cost approach, but Bessant and Caffyn (1997) note that despite its attractions, the concept can often fail. In a response to this they report that the success of a CI program is influenced by a number of organisational factors. These factors include: a clear strategic framework incorporating CI, an underlying supportive culture, an enabling infrastructure, a supporting toolkit and the necessity to strategically manage CI as an ongoing process. Successful CI requires long-term organisational commitment to a course of action and the development of a consistent set of shared values or beliefs.

Chapman and Hyland (2000) argue that effective and sustainable CI in production systems requires strategic approaches within the business, which enable owners or managers to be able to think globally about the business needs but to act locally in response to those needs. The global issues for a business reflect the competitive priorities of the market. Business owners and managers need to understand how local tactics influence the capability of the business to compete on these factors. Local tactics flow from local conditions but they must complement capabilities that are consistent with global market needs. Managers and owners need to foster the development of local complementary tactics and ensure that they are integrated with the strategy of the business.

Continuous improvement can deliver rapid short term improvements and benefits to a business. However, for these benefits to be realised people in the business must recognise that improvements are the result of change. CI in the short term requires that businesses understand that there are many practices and processes that do not add value to the business and these need to be identified; then using a structured process the impacts of change need to be measured and understood before the change is implemented. CI programs are widespread and widely accepted in the manufacturing sector. For example, in 1994, Deloitte Touche Tohmatsu International conducted a survey

of manufacturing strategy, critical success factors, technology, manufacturing infrastructure and performance. In the survey, when asked what were the most important manufacturing enhancement programs for future success, 89 per cent of Australian and New Zealand firms maintained that CI programs were most important. This compares very favourably with US and Canadian results, which showed 83 per cent of respondents viewed CI programs as most important, and European results, which showed 73 per cent viewed CI programs as the most important (Chapman and Hyland 1997). However CI is not as widespread in the beef production sector and there is a need to identify what tools, techniques and mechanisms will enable a CI process in the beef industry.

Continuous Innovation

Organisations sometimes undertake both radical and incremental innovation activities. It should be realised though that to engage in radical innovation, small incremental improvements may sometimes be required. Continuous innovation is defined as "the ongoing interaction between operations, incremental improvement, learning and radical innovation aimed at effectively combining operational effectiveness and strategic flexibility, exploitation and exploration" (Hyland and Boer 2006, pp. 390). It is an ongoing process, and the motive for continuous innovation is to improve performance and to remain competitive.

In large production systems, it is not uncommon for organisations to have an integrated approach to innovation engaging in both radical and incremental innovations. Various departments, through cross-functional teams, will often converge ideas to improve products, services and processes in the organisation with capabilities from various fields. For example, engineers will provide input on designing new products, marketing personnel will advise on when the best time is to launch the product and logistics managers will recommend the best distribution methods. This integration of effort comprises both radical and incremental improvements. While large enterprises can draw together a wide array of expertise and capabilities from different functional areas, small and medium enterprises rarely have the same luxury of resources. So can continuous innovation be achieved in small to medium enterprises with less than 25 employees such as beef production enterprises? and if it can, what are the drivers and inhibitors to widespread

continuous innovation in the beef industry? One way smaller enterprises can draw together the resources and capabilities needed to compete globally is by working collaboratively with local competitors, suppliers, customers and other complementary enterprises, such as in the Beef Profit Partnerships project.

Partnerships and Networks

Many small to medium enterprises (SMEs) in Australia are involved in limited collaborative activities through trade or business associations and some have participated in networks that have been stimulated through government support programs. There has been considerable research into the environmental conditions necessary for successfully establishing networks and other forms of collaboration, but little empirical work has been undertaken on what makes the irresistible business case for an SME to work collaboratively in networks.

According to Beckett, Hyland and Sloan (2003) the terms 'network' and 'collaboration' cover a very wide range of circumstances, and it is argued that the arrangements for business success are situation-specific, but depend on a small number of variables. For example, organizations participating in learning, innovation or supply-chain collaborations may need to develop different capabilities and collaborative arrangements, depending on the outcome sought from the collaboration. There is some evidence that factors related to time allocation and level of effort may inhibit the participation of smaller firms in formal collaborations, and that their ongoing participation depends on how the benefits of collaboration compare with benefits from time invested in alternative opportunities.

Foss (1999) argues that a network is more than the sum of the businesses within the group and further that a network is a collective business structure that combines both stability and variety. In a business network each firm possesses different resources, capabilities and knowledge. Through both cooperation and competition, the network is able to effectively bundle and use these capabilities in ways that a single firm (Foss 1999) cannot do. Similarly Ernst and Kim (2001) maintain that business networks act as a catalyst for knowledge diffusion and capability formation. Simmie et al. (2002) describe how business networks act as centres of innovation and provide several benefits to participating firms. They maintain that small businesses in a network can act as a closely knit production unit

within local supply chains, so reducing transaction costs; they can also take advantage of a knowledgeable skilled labour pool. Within a network the interactions and interchanges amongst individuals can create a learning system that transfers knowledge between businesses. While networks appear to provide advantages to enterprises, Erst and Kim (2001) and Foss (1999) argue strongly that we do not fully understand how networks contribute to the competitive advantage of firms or how networks operate.

Todeva (2001) uses the term 'business network' to describe a variety of collaborations and to distinguish them from social networks and physical networks. From this viewpoint, she puts forward the view that: "Business networks are sets of transactions based on structural formations with dynamic boundaries that comprise of interconnected elements (actors, resources and activities). Networks accommodate the contradictory aims pursued by each actor, and facilitate joint activities and repetitive exchanges that have specific directionality and flow of information, commodities, heterogeneous resources, individual affection, commitment and trust between the partners". Zhou (2001) considered interconnected elements in terms of residents, facilities and protocols. Collaborations have some particular internal workings that can be described in terms of the elemental components, but collaboration does not exist in isolation, and it is generally needed to more effectively engage with a larger network or community. So managers and business owners need appropriate capabilities to fully benefit from collaborations.

In principle, active collaboration between businesses can enable them to achieve outcomes that they could not achieve on their own, while allowing each individual partner enterprise to realise its own strategic goals. This requires a well-developed capacity to collaborate and to learn across differing organisational cultures. Marceau (1999) argued that there need to be business activities that improve the market positioning for the partners involved in the alliance if the alliance is to be ongoing, and that a range of collaborative management and learning competencies and organisational capabilities are needed and must be maintained. Just establishing a collaboration is not enough; there must be both business and housekeeping activities and benefits for it to endure.

From the viewpoint of an individual participating in a collaboration, it can be

argued that the transactions taking place determine the perceived value of the collaboration. If no transactions take place, the collaboration is of no value. If only housekeeping transactions take place, the collaboration can be seen as having little or negative value. Beckett, Hyland and Sloan (2003) focus on transactions and combine these with the potential value of business activities, social activities and knowledge activities. They argue that direct business transactions in networks can enhance revenue, reduce costs, optimize the use of assets, reduce lead-time, enhance reliability or reduce risk. Biggiero and Sammarra (2001) point out that sustainable inter-organisation networks are not only driven by current economic motivations, but by some socio-psychological factors that may lead to future cooperative relationships. Social transactions might enhance an organisation's power base, expand personal networks, reduce perceived inter-organisational risk by better understanding the motives of participants, enhance business environment understanding, or provide an opportunity to test ideas in a friendly environment. Wiendahl, Engelbrecht and Hamacher (2001) see cooperation to meet production demands and learning relationships that support market demands as increasingly important as production paradigms move through mass customisation towards customer-specific production. Knowledge transactions can provide market intelligence, technology intelligence, and operational intelligence, reduce decision-making risk by seeing where new concepts have been successful, and exercise organisational learning competencies that help sustain change capacity in a dynamic environment. Some transactions provide benefits now, and at some time in the future. These three classes of transactions and the characteristic sub-tier transaction classes mentioned above have been combined in a form of map, illustrated in Figure 8.1.

The ability of a business to achieve its goals, fulfil its missions, and make a contributions to the community depends as much on the resources and capabilities available in and through networks (social capital) as it does on the individual knowledge, expertise and experience (human capital) (Baker 2000). Gladwell (2000) argues that to bring about fundamental change in people's beliefs and behaviours, and serve as an example for others, it is necessary to create a community of practice around them, where those new beliefs can be practiced, expressed and nurtured.

So in building networks we can improve our personal lives as the networks contribute to the world by making it a more connected place (Baker 2000). Bryant and Wells (1998) propose that one of the key concepts associated with a systems perspective on innovation is the importance of a supportive culture and social infrastructure. A recurring theme at the National Innovation Summit in Australia in 2000 was that collaborative activities such as networks are an effective means of achieving increased improvement and innovation (Department of Industry, Science and Resources 2000). Holbrook and Wolfe (2000) claim there is also a growing realisation that innovation is grounded in local and regional conditions, and that industry and regional economic growth can be accelerated through the design and management of regional innovation systems that include effective regional improvement and innovation networks and partnerships (Asheim 1996, 2003; Asheim and Coenen 2005). More than ever before, improvement and innovation need to draw on networks and cooperative arrangements (Howard 2005).

Networks are purposeful, value-adding partnerships based on reciprocal transactions between partners. They are oriented to a common purpose which is beyond the limited abilities of network members (Chisholm 1996; Gray and Wood 1991, Roussos and Fawcett 2000). That is, individuals and organisations come together to achieve common outcomes that none of them can achieve separately. Network activity has both external effects (impact on the community) and internal effects (impact within the network) (Chisholm 1996; Ashby 1956). Members choose to belong to networks, and the network is controlled by the members who determine the network's rules, processes and procedures (Chisholm 1996; Weiner, Alexander and Zuckerman 2000). Networks can build a culture and the associated capacity, where network members and partners manage and lead the network, and achieve improvement and innovation across the network. Hill (2002) emphasises the need to institutionalise the participation of partner organisations in networks. It is critical for network members to be able to explain what the network is about, providing details of upcoming activities and establishing ongoing communication (Wellington 1999).

The concept of 'New Regionalism' (Garlick 1997; Rainnie 2004) is aligned with the type of culture that is supportive of sustainable improvement and innovation networks. 'New Regionalism' is about developing creative regions that have the ability to generate and implement new ideas, by actively linking its

structures and processes of innovation and learning to regional needs. Another factor critical to the success of regional improvement and innovation networks is to ensure the network addresses issues that matter to local people over time, across concerns, and across generations of dispersed leadership (age and experience) (Roussos and Fawcett 2000). It is critical to develop specific, measurable, actionable, realistic, targeted and time framed (SMARTT) outcomes on which the network can focus and against which network members can monitor and celebrate their progress (Fawcett et al. 2000; Weiner, Alexander and Zuckerman 2000; Hill 2002). Weiner, Alexander and Zuckerman (2000) emphasise the need to celebrate successes, even small ones. So is it possible to establish a network of partnerships to rapidly innovate and improve beef business throughout Australia and New Zealand and why would beef producers choose to engage in such a network and what are the benefits on that engagement?

Implementation in BPP

- A Professorial Research Fellow has been appointed at the University of Queensland (November 2007) to lead the R&D Strategy in the project.
- A PhD student funded from the project has commenced at the University of Queensland (February 2008).
- Several other PhD students with external funding are working on research topics closely related to the target outcomes of the BPP project.

Conclusions

The establishment of a network of partnerships focussed on continuous innovation and continuous improvement throughout Australia and New Zealand is an ambitious task. While the project has been in progress for two years the facilitators have made substantial headway in establishing 38 collaborative partnerships. As with most change initiatives there have been setbacks and these have been exacerbated by a lack of resources. Where the Beef Profit Partnerships are most successful it is because of the commitment and dedication of the facilitators and the beef business owners and managers. Moving from relationships where the facilitators provided advice and access to experts in farm animal and land management, to a partnership where the facilitators are involved with the business owners in identifying focuses for change and

implementing improvements and innovations around that focus has presented a real challenge for all participants. For many farm businesses, particularly small family businesses, it is confronting to focus on measuring and assessing the performance of the farm from a businesses perspective and then to focus on improvements that can decrease costs and improve profitability.

Operating as a collaborative partnership of small businesses, the business owners and facilitators support one another with the difficulties they face. Farmers and facilitators working together to analyse the situation on individual farms and identify focuses for improvement bring together a learning network with a far greater breadth of experience than could be found in a one on one mentoring situation. The partnerships also provide opportunities for business owners to test ideas with one another and develop their knowledge base by sharing information.

While the research is in its early stages, it is apparent that as the partners develop their knowledge and skills they are developing the capabilities needed to improve and innovate. The partnership and collaborative structures allow businesses to access a wide range of knowledge and expertise that an individual small business would struggle to access and pay for. As the partners develop improved business competencies and innovate in their business operations, the returns in terms of reduced costs and improved profitability will come to the fore. Farm businesses from all sectors can benefit from implementing a structured approach to continuous improvement and innovation using a partnership approach.

Appendix

Figure 8.1. Beneficial Transaction Map (Beckett, Hyland and Sloan 2003)

