

An opportunity not to be missed: the possibilities to support Australian dairy and meat processors in agricultural advisory service provision

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Abstract: Food processing staff and contractors employed as field services officers (dairy industry) and livestock buyers (meat industry) work at the interface between the processor and producer however it is not well understood in the Agricultural Innovation Systems literature or in Australia's agricultural advisory sector, what capability, capacity and aspiration there is in the dairy and meat processing sectors to deliver extension and advisory services for practice change on-farms.

Using a case study of a dairy processor and meat processor operating in Australia, the question this paper seeks to answer is: what is the 'opportunity' for multi-sectoral advisory system actors to engage with and support dairy and meat processors in their provision of agricultural advisory services? Research findings are drawn from a one and half year collaborative action research project (2016-2018), which engaged processors, industry research development and extension (RD&E) organisations, private agricultural consultants and researchers in a collaborative effort.

Key findings indicated that field officers and livestock buyers need to maintain a complex skill set and knowledge base to customize their services in response to individual producer needs. Furthermore, there are possibilities of and ambitions for field officers and livestock buyers to fill farm service gaps, facilitate the translation of industry based research and development and engage with on-farm practice change as part of their core service. We contribute an empirical understanding of possible pathways to support dairy and meat processors operating in Australia in their provision of quality services - services that contribute towards Australia's agricultural innovation system.

Keywords: extension and advisory services, organisational learning, collaborative practice, pluralistic agricultural advisory systems

Introduction

Food processors are likely to be significant private sector actors in the agricultural advisory service system since they are responsible for aligning farm outputs with industry standards, market specifications and consumer preferences through sourcing agricultural products from compliant farmers. Food processors have been observed to employ front-line staff acting as an intermediary between the processing company and their suppliers (farmers) at both a transactional and service level. Front-line staff provide services that are 'embedded' in the supply contract agreement. Unlike information and advice provided by input suppliers as part of a product sale, frontline staff provide company services 'free of charge' in return for supplying quality product. Supplier services driven and delivered by processors are a part of national agricultural advisory systems. As an international trend, national systems are shifting from public-led and supply-driven systems towards pluralistic systems that are increasingly

market-based, commercialised, privatised and demand-driven (Zhou and Babu, 2015; Benson and Jafry, 2013; Faure et al., 2012; Hunt et al., 2014; Rivera et al., 2000). There could be great value engaging and supporting the food processing sector in delivering agricultural advisory services to farmers however it is this part of the agricultural advisory system that remains under explored in public research. Consequently, there is little published research in the agricultural innovation systems and agricultural advisory services literature that focuses on food processors in system function analyses or details what services are provided. This research gap has been identified by others as a need to conduct more empirical inquiries about the evolving roles of different organisations in pluralistic agricultural advisory systems, with specific interest in the functions and practices of private sector actors (Nettle et al., 2017; Paschen et al., 2017). Furthermore, empirical research through a national survey of Australian farmers (n=1003) noted that while farmers are self-sufficient in using their own knowledge, skills and experience to address agricultural challenges, farmers also indicated that they need to actively seek 'expert' input. Yet only 38-48% of surveyed farmers indicated they 'always know' where to seek expert input in an information rich environment, leaving over 50% of surveyed farmers unsure how to access information, advice and support (Nettle et al., 2018). Highlighting the advisory role and value of front-line staff employed by food processors, may assist in orientating farmers to expert input.

This paper adopts a broad view of what constitutes an agricultural advisory system and service. A narrow definition interprets the system as developing and delivering services that extend agricultural research outputs to producers for increasing production and economic performance of farm businesses. A broader understanding of the agricultural advisory system considers it as a sub-system of an agricultural innovation system where the agenda for adaptation and change relies on the delivery of a whole range of agricultural advisory services such as credit access, supply procurement, compliance performance, biosecurity regulation, animal welfare management and market access (Rivera et al., 2002; Mangheni, 2016). Agricultural Innovation Systems thinking also acknowledges that the drivers for change emanate from a complex mix of producing food in challenging environmental conditions, meeting growing demands for agricultural products by wealthier and rising human populations that are ecologically sustainable, ethical and safe and responding to hyper-dynamic market conditions (University of Melbourne, Synthesis Report, 2016, Eastwood et al., 2017). Consequently, the need to coordinate and collaborate across pluralistic agricultural advisory systems i.e. across public, industry and private sectors, becomes a critical system function to generate innovations and collective goods that can be used to support farmers in responding to these challenges. How does this agenda map against the operating context of processors?

For the food processing sector, adopting a Supply Chain Management approach is important for achieving sectoral competitiveness and generating cost efficiencies within each supply chain unit by integrating organisational processes, undertaking strategic network design and coordinating material, information and financial flows (Ascione et al., 2011; Kilger, 2008). Agricultural advisory services delivered within a supply chain approach are likely to be framed and directed towards enhancing supply chain performance which may or may not correspond with a broader agricultural innovation agenda that is set by public or industry actors. The key question this paper seeks to address is: what is the 'opportunity' for multi-sectoral advisory system actors to engage with and support dairy and meat processors in their provision of agricultural advisory services? The 'opportunity' will be unpacked by asking a set of sub-questions. Firstly, what is the processor role in the agricultural advisory service space? It is important to understand the nature and extent of agricultural advisory service provision practised by processors as this will inform the development of the engagement opportunity. A more fundamental level of inquiry is to know what capability, capacity and aspiration there is in the processing sector to deliver agricultural advisory services. Secondly, what is the value proposition for engagement between processors and multi-sectoral advisory system actors as a collaborative venture? While food processors may be providing agricultural advisory services, it is not clear what value could be generated from processors engaging with multi-sectoral advisory system actors. Thirdly, what are the possibilities and challenges with extending or progressing the 'opportunity' as identified?

To address the key questions, this paper will draw on a recent processor engagement experience (2017-2018) set up as research trial (Processor Trial) involving a dairy and meat processing company operating in Australia. The processor engagement experience involved processor companies in collaboration with dairy and meat industry R&D organisations, agricultural consultants and academic researchers. The Processor Trial was jointly sponsored by the Australian Government through a national research program (Rural R&D for Profit program) in partnership with Research Development Corporations (RDCs), state governments and a university. As part of a larger project agenda, the Processor Trial aimed to ‘stimulate’ the private sector (processors) in Australia’s agricultural advisory system as an engagement challenge to generate farmer-based and industry goods (example: knowledge, technologies, processes or products), strengthen the pathways used to extend agricultural R&D to end-users and fostering cross-sectoral collaborations to enable innovation and growth of Australian agriculture (University of Melbourne, Faculty of Veterinary and Agricultural Sciences, 2018).

The paper will provide the context and main concepts for the analysis of the key findings as background information (Section 2) describing the imperative to engage with the private sector, outlining collaboration as means for competitive advantage through the concept of organisational learning and extending this concept towards a collaborative community. This will be followed by a description of the Participatory Action Research methodology used in the Processor Trial and mainly qualitative data collection methods used. The paper is using the Processor Trial experience as a case study of engaging food processors in the agricultural advisory system space (Section 3). Key findings will be discussed in Section 4 using the sub-questions as themes to deliberate on the engagement and support ‘opportunity’ that might exist. Section 5 will draw the main conclusions of this case study with indications for further research.

Background

The imperative to engage in collaborations

The Processor Trial was set up to engage with food processors using the concept of collaboration as a guiding principle for engagement practice. The imperative for engaging the private sector as a cross-sectoral collaboration has been articulated from the perspective of a government funded intervention, namely the *Stimulating private sector extension in Australian agriculture to increase returns from R&D* project (The University of Melbourne, 2018). Recent critical reviews of Australia’s agricultural advisory system (Hunt et al., 2012; Hunt et al., 2014; The University of Melbourne, 2017) and government funded research projects (Rural Industries Research Development Corporation, 2017) have proposed strategic actions for RD&E improvements and highlight the need for industry and government to coordinate the involvement of the private sector in RD&E and support them in their service delivery role.

Approaches that are more likely to have the desired effect of responding to the evolving priorities and needs of agriculture seek to bring multiple groups with a shared interest to work collaboratively over a period, sometimes known as “coalition systems” (Davis and Place, 2003), “co-innovation projects” (Turner et al., 2017) or a “program team model” (Nettle, et al., 2013). The challenge lies in industry, public and private sector actors working collaboratively when there is a level of uncertainty about what roles each other has in the innovation space, how to take what action and for whose interests considering the diversity within the system. What is worth exploring is how commercial organisations might approach and consider collaboration.

Collaboration for competitive advantage

The concepts of the learning organisation and organisational learning are useful to draw on as an interpretive framework for understanding a processor’s approach to change management and what might drive the adoption of collaborative practices. The ‘learning organisation’ and ‘organisational learning’ concepts were first proposed in the 1980s based

on Senge’s work on group problem solving using systems thinking (1990), Argyis and Schon’s double-loop learning (1978) and Pedler’s learning company model (1991). A learning organisation is the location and context in which structures and competencies are used to support learning and innovation (Wang and Ahmed, 2003; Roland, 2005). Organisational learning is an intentional process and has been summarised in five dimensions by Wang and Ahmed, (2003) based on their extensive literature review. The five dimensions focus on individual and collective learning capacity, the system in which learning is enabled, the learning culture that provides the context for sense-making, knowledge management practices and the use of learning for continuous improvement to achieve change. When these five dimensions are put into practice, the ultimate outcome is adaptation to a problem context, learning from people across the company, building learning capacity and contributing to the education of the wider community. Yet is this framework enough to gain a competitive advantage in the 21st century?

Wang and Ahmed (2003) and Shin et al., (2017) argue that the original idea of the learning organisation and the process of organisational learning need to be revisited because of today’s challenging operating environment that is being shaped by climate change, hyper-dynamic markets, vertical integration of supply chains, rapid technological developments, global economic stagnation and a proliferation of information generation. The prevailing concepts lock mindsets and practices into taking a traditional scientific approach to management that while provides a ‘safe’ logic and manageable risk, it can fail to generate the level and type of change that may be required to achieve a competitive edge. Companies can be so tied up in the daily operations that they fail to ask the probing question that might challenge their basic assumptions and seek the options that redesign processes (Shin et al., 2017:47). Economically sustainable companies need to make “quantum leaps”, become innovation leaders and redefine and create new markets i.e. embark on value innovation (Wang and Ahmed, 2003; Shin et al., 2017). Wang and Ahmed (2003) have noted the shift in focus from the ‘old’ to the ‘new’ view of organisational learning (refer to Table I).

Table I. A shift of the organisational learning focus (Wang and Ahmed, 2003:14)

Existing focus	New focus
Single-double loop learning	Triple loop learning
Knowledge accumulation, dissemination, retention, refinement and creating through incremental change	Knowledge creation through radical change
System thinking	Creative thinking
Competition-base strategy	Competence-based strategy
Continuous improvement in organisational performance	Organisational sustainability through creative quality and value innovation

The challenges involved with and the know-how of making this shift has been well researched through lines of inquiry such as power and politics, leadership, barriers to learning, social processes of learning and institutional structures and tools for monitoring and evaluating organisational learning (Shin et al., 2017, Lawrence et al., 2005; Jogulu, 2011; Wenger, 1998; Chipato, 2016). Success from organisational learning is recognised as coming slowly over time through a consistent emphasis on and commitment to communicating a clear direction and purpose, empowering staff, accumulating and sharing internal knowledge, gathering and integrating external information and challenging the status quo (Shin et al., 2017). In summary, “The old model, “the top thinks and the local acts”, must now give way to integrating thinking and acting at all levels,” (Shin et al., 2017:47). Heckscher and Adler’s (2006) work propose that post-modern corporate life is self-organizing as a “collaborative community”. Trust is still possible in dynamic and diverse relationships where unity and autonomy have a chance of being reconciled. The collaborative corporate community is driven by the need to generate complex, knowledge-based and solutions-oriented ‘goods’ based on both market and social demands for customisation, accountability

and specialisation. The collaborative community is different from other forms of social organisation in that it is coordinated through trusted relationships rather than authority (hierarchical principle) or commercial exchange (market principle). Generating and sharing knowledge to build social capital resources and create shared value are considered primary benefits from collaboration in recognition of the increasing interdependencies involved in corporate relations at multiple levels i.e. employment relations, interdivisional relations and inter-firm relations. The role of management is to facilitate collaborative processes and transform experiences into organized learning so that it can become accessible to others. Collaboration is an opportunity, not a threat.

Methods

Participatory Action Research approach

The methodological approach adopted by the Processor Trial is a Participatory Action Research (PAR) methodology. PAR is appropriate to a research context that aims to facilitate multi-stakeholder engagement and collaboration that brings together researchers and a range of stakeholders who will be most affected by interventions to change a problem situation (McIntyre, 2008; Crotty, 2015). In practice this means PAR participants are empowered to be involved in defining the research problem and devising change activities based on their understanding of their situation (McIntyre, 2008; Crotty, 2015). PAR methodology is a political project to redistribute decision making and problem-solving power for change as a collective effort i.e. social research for social change, that shifts the researcher-researchee dynamic from, “I ask...you answer” to “we explore” (Wadsworth, 2001:78). Change in the form of new strategies is based on practical or tacit knowledge generated from collaborative efforts and reflective practice. A general model of PAR comprises of multiple cycles of four fundamental action research practices: defining the issue, planning action, taking action and reflecting on the action taken through studying the consequence of actions taken and identifying general findings or lessons learnt (see Fig. 1 for a diagrammatic representation of the PAR process).

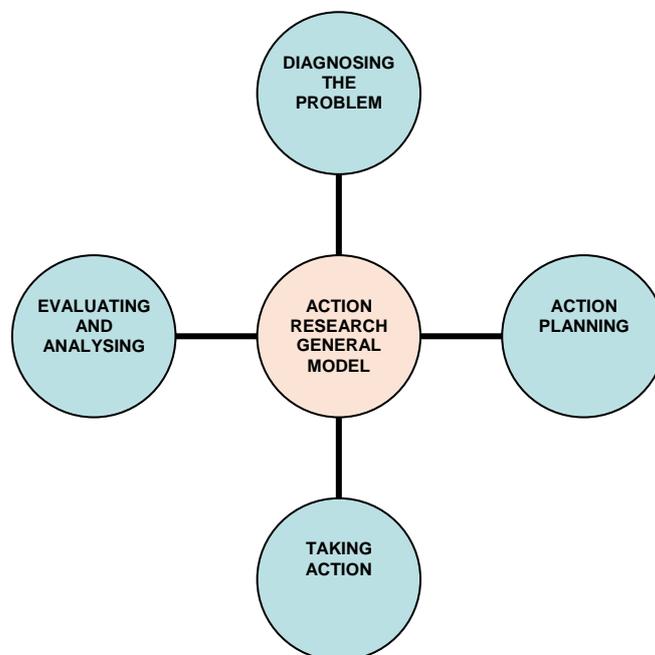


Figure 1. A general model of action research

A combination of public and private goods is expected to be generated from undertaking a PAR approach and include effective outcomes for on-ground stakeholders, improved coordination and collaboration for example in communication systems and a strengthened “improvement orientated” culture (Australian Government, 2010).

Dairy and meat processor case study

The Processor Trial was proposed by the participating Dairy Research Development Corporation as a key investor in the “Stimulating private sector extension in Australian agriculture to increase returns from R&D” project. The ‘opportunity’ to engage food processors was presented as follows:

The opportunity for agricultural R&D organisations to provide benefits to farmers through processors is evident, with better engagement and interaction between R&D organisations and processors potentially being a win: win. To determine this, a better understanding of the needs of processors and the drivers for their business to utilise the outputs of R&D is required, including a clear understanding of the limitations and competing priorities within their business (Dairy RDC Trial Proposal, 2016)

In alignment with the PAR methodology, the proposal for a processor trial was presented at a series of farmer and agricultural advisory regional forums (n=140 farmers and advisers) to receive their critical feedback. This was to acknowledge that farmers and advisers are key stakeholders in agricultural advisory systems and should be given the chance to shape the focus of research that directly impacts on them. Following the refinement of the trial proposals through the regional forums, the Processor Trial project team was set up to scope and implement an action research plan to engage food processors in agricultural advisory services (see Fig 2. for a summary of the ‘refinement’ process of the trial focus).

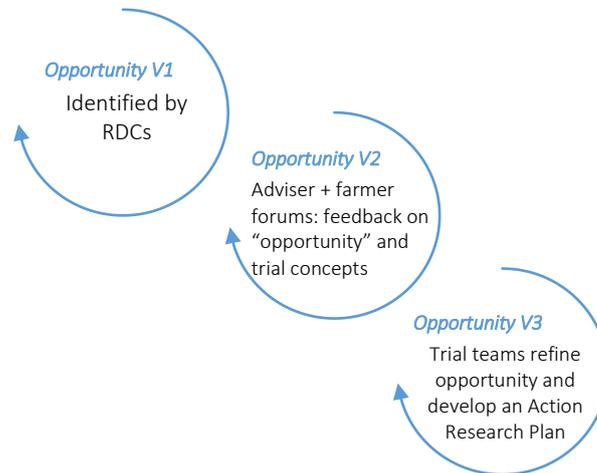


Figure 2. The refinement process of the trial focus

The Processor Trial project team involved one representative of the dairy, red meat and pork RDC - the dairy representative acting as the RDC Lead, two academic social researchers – one researcher acting as the Research Lead and two agricultural consultants - acting as project officers. The Processor Trial project team members in this paper are referred to as multi-sectoral advisory system actors. The Processor Trial engagement team includes all the project team members as well as the processors including management, front-line staff and suppliers (farmers). The collaborative engagement process with the case study processors proceeded as an adaptation of the general PAR model (see Fig. 3 for detail)

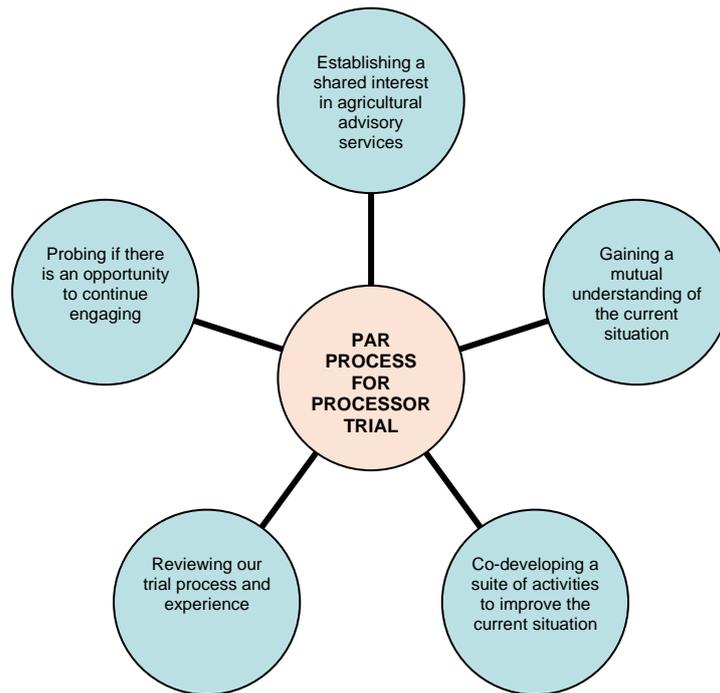


Figure 3. Representation of the Processor Trial’s adaptation of the PAR process

The Dairy and Meat case study processors were carefully selected. A confidential review of possible processors was undertaken by the Processor Trial project team using in-house knowledge of the processing sector provided by the RDCs and the project officers. The following criteria assisted with targeting which processor to approach from dairy and red meat sector: project team connections with key contacts in processing and procurement; processing capacity, now and in the future, percentage of exports, interests of the processor in a range of quality adding processing aspects and a measure of qualitative factors around possible interest, relevance, and /or commitment to participating in the trial.

The Dairy Processor engaged operates the oldest dairy processing company in Australia operating in south east Australia producing high quality dairy products for domestic and export markets. In the dairy industry, the dairy farmer tends to supply milk to one processor in an on-going arrangement. Hence, a relationship is formed between the processor and the farmer that is usually maintained over a period of years until the farmer decides to review milk price and contractual arrangements. The farmer’s main point of contact with milk companies is the field officer (front-line staff).

The Meat Processor engaged is a large multi-national meat processing company that operates in both southern and northern Australia. The red meat and pork industry is different, where the farmer has several avenues to sell their livestock, e.g. through an agent, saleyards, direct to processor or on-line. The processors’ livestock buyers operate in an environment where they form direct relationships with farmers and /or livestock agents and require a detailed knowledge of the market to purchase the quality and quantity of livestock they need.

The quality of product purchased is significant for processors in both industries, to meet their customers’ requirements. Extensive research has been undertaken in both industries to assess produce quality and the management practices on farm to achieve it. Dairy factories set milk quality standards based on a range of measures that remain consistent throughout the season and are measured directly at the point of pick up from the farm. Dairy farmers are quickly notified if there are any issues with the quality of milk produced.

Meat processors set the characteristics they require of the livestock they purchase and these characteristics can change regularly based on customers' requirements. The meat industry has developed mechanisms to report back to farmers on the quality of livestock against the desired characteristics. There are inherently greater difficulties with reporting back to the farmer on the quality of carcass due to the range of livestock (e.g. age, sex), number of variables measured and difficulty with attributing what practices may have contributed to certain undesirable results. Hence, both industries and processors have invested in researching how to produce and measure the quality of products from dairy and red meat farms and both field service officers and livestock buyers play a strong role in delivering this R&D.

Methods for data collection

Qualitative and quantitative research methods were used to collect and analyse data during the Processor Trial. Methods used range included semi-structured interviews (face to face and telephone), written evaluation forms for each engagement activity with the case study processors, an online survey as part of a professional development needs analysis, a written skills audit and a telephone survey with a select group of the Dairy Processor suppliers. This paper is drawing on the data sets generated through these mixed research methods as listed in Table II., supplemented with a document analysis of trial reports and participant observations.

Table II. Data collection methods for the Processor Trial

Data collection method	Who	How many
Telephone interviews	Dairy Processor – front-line staff	8
Telephone interview	Dairy Processor – Quality Assurance Manager	1
Telephone interviews	Dairy Processor – management (team and supply)	2
Telephone survey	Dairy Processor - suppliers	9
Engagement meetings	Dairy Processor – team manager	2
Priority setting workshop	Dairy Processor – front-line staff	1
Report back and activity planning meeting	Dairy Processor – team manager	1
Professional development needs analysis online survey	Dairy Processor – front-line staff, team manager and quality assurance manager	9
Face to face semi-structured interview	Dairy Processor - team manager	1
Engagement meetings	Meat Processor - assurance program manager	2
Workshops – focus group and skills audit	Meat Processor - front-line staff	4
Online survey – review of trial experience	Processor Trial project team	6
Document analysis	Trial team monthly teleconference meeting notes, reports on current situation analysis	25
Document analysis	Situation Analysis reports presented to each processor	2
Workshop Evaluation Forms	Dairy and Meat Sub-trial workshops with front-line staff	32
Participant observations	Research Lead	ongoing

Results and Discussion

Opportunity Part A: processor role in delivering agricultural advisory services

Both case study processors are active in the agricultural advisory space, aspire to enhance their services to suppliers through front-line staff training and professional development and are willing to collaborate with multi-sectoral advisory system actors to achieve service improvement. These key findings are drawn from a series of engagement and research

activities conducted over the course of the Processor Trial: meetings with Dairy and Meat processor management personnel, auditing Meat Processor front-line staff of their core skills and knowledge (self-assessment), surveying Dairy Processor front-line staff about their professional development needs (self-assessment), and interviewing a small group high performing suppliers contracted to the Dairy Processor over the phone.

In the case of the Dairy Processor, it is understood that front-line staff need to deliver services in the traditional role of the field officer i.e. respond to milk quality issues, provide administration services and retain a steady milk supply to the factory. However, management and front-line staff also understand the role of the field officer as an evolving remit. The core field officer must also have the capability of holding knowledgeable conversations with suppliers across a range of farm production topics (for example: agronomy, animal nutrition, animal health and welfare, nutrient management, farm business management), brokering knowledge by connecting suppliers to expertise or sourcing information to provide an informed response to a question, and instigating and supporting suppliers in practice change.

Most of [our suppliers] know that they can ring us if they want any advice, or if they're looking to find out who to talk to about something, most of my guys will give me a ring and say, "I'm having this issue, who do you think I should talk to?" Or, "Have you got any experience with it?" (Front-line Staff, Dairy Processor, Follow Up Phone Interview, 2017).

While front-line staff indicated that they are generally 'comfortable' or 'confident' with their extension skills, conflict management and resolution is a top priority area for professional development (see Table III). Nutrient management such as soil testing, effluent management, nutrient budgeting and fertilizer planning may not be as critical to the role because suppliers use their own agricultural consultant or fertilizer input supplier for this type of information and advice.

Table III. Skills ranked by relevance and need for training for front-line staff (Dairy Processor)

← Increasing relevance							
Increasing need for training ↑	Extension skills	Farm Business Management	Human Resource Management	Nutrition	Animal Health	Agronomy	Nutrients
	Conflict management and resolution	Using DairyBase	Succession planning	Feed budgeting	Euthanasia best practice	Crop types and management	Interpreting soil tests
	Monitoring and evaluation of practice change	Assessing development opportunities	Sharefarming arrangement and leasing	Ration balancing	Awareness of Aust animal welfare standards and guidelines	Pasture species	Knowledge of regulatory requirements of effluent
	Understanding learning styles of farmers	Interpretation of financial data	Farm safety and policies	Nutrition knowledge	Condition score cows	Irrigation management	Designing effluent system
	Identification and clarification of problem	Collection of data	Recruitment	Calf rearing	Managing a cow's environment	Pasture establishment	Nutrient budgeting
	Identification of options and clarification of action/s to be taken	Interpretation of physical data	Employees and managing staff	Heifer management	Bobby calf management	Grazing management	Fertiliser planning
	Connecting farmers to	Understanding the dairy	Performance review	Dry cow management	Mastitis management		

	expertise	industries current position					
	Active Listening		Farm labour resources				

The small group of contracted milk suppliers interviewed were generally content with the traditional service received, some suppliers saw value in their field officer being able to provide a current situation analysis of the dairy industry, advice on workforce management issues as it is not an area that suppliers are willing to pay for, translate R&D outputs to make them relevant to a supplier’s farming context and link suppliers to funding opportunities to support on-farm practice change. Other suppliers were cautious about their field officer offering ‘specialist’ services as they were not always confident of their skill set and experience particularly in farm business management. The implication is that each supplier will have their own expectations and needs of their field officer. Management recognises that their front-line staff need to be both proactive and responsive to their supplier’s needs and openly encourage each staff member to continually find “something” they can do to benefit the supplier’s business and production situation. A key support for the field officers is being able to refer to each other for knowledge and advice based on the diverse expertise held within the group, however there is potential to create more formal structures e.g. mentor/mentee relationships, to take advantage of the team’s expertise. The mentor-mentee model is considered an effective way to support those in the agricultural advisory role (King et al., 2018).

In the case of the Meat Processor, the role of the livestock buyer and the associated skill set was not well defined, and currently there is no formal qualification created for this role. In collaboration with management and drawing on the expertise of the Processor Trial team, a list of the livestock buyer’s core skills was generated to conduct a skills audit of the livestock buyer team in the form of a series of regional workshops. Table IV. illustrates the breadth and depth of skill sets management requires or expects from their front-line staff and indicates that extension and advisory skills are part of the role, particularly under the area of recruiting suppliers and maintaining supply.

When asked during the skills audit workshops what they thought their key strengths were across their core skill set, the livestock buyers responded as follows: live animal assessment during the procurement of cattle for processing; all the “people and communications” skills which maintains trust and confidence with management, peers, livestock agents and their supplier base; loyalty to the meat processing company, acting on principles and ethics, ability to handle constructive feedback, ability to work as team and managing time effectively (Skills Audit Report Briefing, 2017).

Table IV. Skill sets from the Livestock Buyer Skills Audit

LIVESTOCK BUYER SKILLS AUDIT

Meat processor operations

1. Assist suppliers with meeting the company’s producer assurance program requirements
2. Up to date with developments in the meat processing company

Meat industry

3. Understanding of the red meat industry - who does what

Assessment of carcasses

4. Visual assessment of livestock on-farm and in sale yards on market specifications
5. Providing feedback to producers or agents about kill data
6. Interpreting Australia’s national meat standards
7. Knowledge of which carcass measures are used to calculate national meat standards (beef)
8. Lean meat yield and eating quality (Lamb)
9. Interpreting data from Livestock Data Link (LDL)
10. Use of the “Solutions to feedback” Library in LDL
11. Knowledge of the science behind factors impacting eating quality of red meat

Farm production

12. Managing livestock plane of nutrition
13. The power of on-farm observation – farm entry, infrastructure, pasture, animals, producer, eating quality of livestock
14. Understanding how red meat production fits into a producer’s business

Recruiting producers and maintaining supply - extension and advisory skill set

15. Analysing meat processor company grid and comparing with competitor's grid or sale yards
16. Recognising the preferred producer type
17. Building trust and credible relationships with producers
18. Building trust and credible relationships with livestock agents
19. Identify opportunities to provide training or conduct on-farm trials for producers
20. Leading discussions about practical solutions with producers
21. Knowledge of local and industry expertise and passing contacts onto farmers

Work skills

22. Time management - inspections, responding to queries, paperwork
 23. Email, social media, website
 24. Electronic booking system
 25. Conflict management and resolution, negotiation
 26. Working within a team
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What is evident is that there is significant interest in developing the skills of livestock buyers in delivering a supply chain specific extension service. The service involves livestock buyers accessing and interpreting outputs from a carcass feedback system (Livestock Data Link - LDL) to advise their suppliers on how they can improve their compliance performance in meeting market specifications for beef product. Training the livestock buyers in using LDL is a key activity that has been co-developed during the Processor Trial and indicates that the Meat Processor is willing to invest time and other resources over a significant period to build the capability of their staff in delivering processing-specific extension. Audited livestock buyers indicated that they were also interested in knowing more about agricultural R&D programs and projects that their company was involved in to support their current role as they realise they are an important "cog in the chain" (Skills Audit Report Briefing, 2017), and must achieve a win: win situation for the supplier, livestock agent, the processing company and themselves. It is in this space where the pressure, challenges and complexities arise for the livestock buyer.

What both examples from the case study processors show, is that front-line staff are required to develop and maintain a complex skill set where extension skills are an integral part of the mix. Management from both case study processors were prepared to prioritize and provide staff training in the extension and advisory space partly motivated by seeing value in enhancing their core service to their supplier base to gain loyalty from current suppliers and to attract future suppliers. It is also a means to improve the overall performance of the supply chain where the responsibility to find better ways to operate and add value is considered by the Dairy Processor to be everyone's duty, "we all need to be effectual across the whole chain here." (Dairy Processor Management, Interview 2, 2017). Recent research from the red meat sector in New Zealand, indicates how red meat processing staff have the capacity to adopt a role of an innovation intermediary (coordinator of innovation processes between the farmer and processing company that received dedicated funding during the pilot study) albeit at varying degrees depending on skill capability, working knowledge of agricultural extension practice and time availability (Westbrooke et al., 2018). The role of front-line staff in this research was in identifying the initial 'innovation' needs of the farmer through their daily contact with farmers and connecting them to the company's innovation intermediary.

The Trial's findings align with the "new focus" of the learning organisation that is orientated towards a competency-based strategy for knowledge creation rather than a competitive-strategy (Wang and Ahmed, 2003). Engagement opportunities between dairy and meat processors in Australia and multi-sectoral advisory system actors are possible when there is a strategic focus on professional development of staff that not only fills a knowledge gap deemed a high priority, but also builds the learning capacity of individual staff and management through the process and identifies ways for new or rediscovered knowledge to be shared adding value along the supply chain. The importance of managing knowledge assets and integrating different knowledge streams to support innovative processes is of relevance here and is highlighted by Paschen et al. (2018). Both team managers from the case study processing companies demonstrated a proactive and supportive attitude towards skills development and training suggesting they are actively shaping a culture of learning and knowledge development within their company.

Opportunity Part B: the value proposition for the ‘opportunity’

It is important to reflect on where value was created during the Processor Trial and for whom i.e. how value was distributed, so that a value proposition can be articulated and be used to prepare for future engagements with dairy and meat processors. This is no easy task considering value from collaborative arrangements has been observed as often hard to define and can be viewed as negligible partly because the rate of output can be extremely slow and partly because the value of collaboration needs to achieve something that could not have been attained by an organization acting alone (Huxham, 2003). Table V. is a presentation of some examples of what Processor Trial participants identified as ‘value’ from engaging as a collaborative trial team.

Table V. A sample of the ‘value’ generated through the Processor Trial

Dairy Processor	Meat Processor	Multi-sectoral advisory system actors
<i>Independent view of company</i>	<i>Independent view of company</i>	<i>New insights</i>
Provided a trusted ‘independent party’ to review front-line staff capability and internal communication and information flows	Provided a trusted ‘independent party’ to review front-line staff capability and internal communication and information flows	Adopting a professional development focus with front-line staff works as a ‘shared interest’ in the RD&E space Processors are driven to find ways to attract and retain their supplier base by investing in “small nuances” that front-line teams can offer as a competitive advantage
<i>Enabling strategic planning</i>	<i>Enabling strategic planning</i>	Enhancing the returns of R&D via the processor can happen at several levels within the business, not just through front-line staff
Supported the strategic planning of front-line staff professional development	Supported the strategic planning of front-line staff professional development	
<i>Practising open communication</i>	<i>Practising open communication</i>	Working as cross-sectoral teams (public-industry-private sectors) means it is wise to begin with low-risk ideas/activities so that the initial experience is more likely to be positive for trust buildin, which can be drawn on over time for more high-risk ideas/activities Understanding that if the engagement process was to be repeated with other processing companies, it is likely that the type of outcomes and resulting actions will vary from processor to processor because of the unique operating context of each processor Greater appreciation of the level of skill required and complexity involved in developing carcass feedback systems into an extension service
Opportunity for front-line staff, suppliers and management to give open and honest feedback about current operations and reflect on the current service offer to their supplier base	Opportunity for front-line staff to speak openly about current working situation with the support and encouragement from management	
<i>Convenient engagement approach</i>	<i>New and shared knowledge</i>	<i>The establishment of a functional working team</i>
Flexible and “non-invasive” approach when and how engagement took place with the processor therefore the trial experience was not disruptive to core business activities	Opportunity for front-line staff to share knowledge and experiences while picking up new ideas from others	An effective team involves a good mix skills, knowledge and respect – the Processor Trial project team had this mix and provided a good basis for the trial to succeed
<i>New tool</i>	<i>New tool</i>	
Creation of a survey tool to be developed further by the processor to engage with their supplier base	Creation of a survey tool to be developed further by the processor to engage with their supplier base	

Case study processors evidently valued having access to a team of people (multi-sectoral advisory system actors) who were considered trustful and ‘independent’ and therefore suitable to undertake an internal review of front-line staff capabilities to achieve their role and make inquiries about the communication and information flows between management, front-line staff and suppliers. Value for the Processor Trial project team was mostly identified as gaining insights and awareness about the case study processors in terms of the complex supply chain environment they operate in, sharing a vision with RDCs to build agricultural extension and advisory capability and the commercial drive to constantly find a competitive

advantage within the processing sector and global market place. Although neither case study processor mentioned it, value was generated for each processor cost-free but required the use of company time. A Cost Benefit Analysis was conducted for each sub-trial by a project consultant. Combining the Present Value of Benefits (PVB) for both sub-trials based on a set of assumptions, the tentative PVB for Trial 1 is \$5.25 million. Please note that this estimate is still tentative and refers to a discounted present value, so cannot be directly compared with the nominal investment of the project.

Returning to the main tenet of collaborative practice which is to generate mutual value amongst the collaborators based on a shared interest (Adler and Heckscher, 2005), in practice this is not a straight forward task considering the range of 'value' identified by the Processor Trial participants as either private goods for the Processor and industry goods for the multi-sectoral advisory system actors with different value qualities. What can be said is that any value proposition for collaborative engagement between a dairy and meat processor with multi-sectoral advisory system actors needs to be continually articulated to demonstrate a good understanding of the needs and operating context of the processor where value might be generated in supporting them in improving supply chain performance. The challenge for the Processor Trial project team was constantly proposing and developing other activities that might add value for the Dairy and Meat Processor as there was an unspoken impression that it would be putting the impetus for collaboration at risk if value was not continuously generated throughout the trial period. The collective value is in all actors being able to draw on the social capital created for future engagement opportunities.

The case study processors and multi-sectoral advisory system actors for the most part, successfully collaborated on a shared interest in progressing the delivery of agricultural advisory services generating value as both private and industry goods. Understanding a processor as a learning organisation can assist with understanding how learning and change is managed: either as a process of continuous improvement based on a knowledge procurement culture or approached as a creatively disruptive experience based on a culture of value innovation (defining new markets for supply). Ayre et al., (2018) indirectly responds to the concept of value innovation in their paper on exploring the value proposition of digital technologies in smart farming. The 'digital disruption' will transform the way agriculture is done world-wide, therefore a new market for agricultural advisors is emerging in providing services in extending and advising on smart farming tools and practices however the paper asks what is the business case and challenges for private sector advisors wanting to create a value innovation opportunity in this arena.

In the case of the Processor Trial, what are the possibilities for continuing this opportunity with the wider processing sector for the dairy and meat industries in Australia? The multi-sectoral advisory system actors have suggested ways that the 'opportunity' could be ongoing based on their responses to a reflective online survey. Suggestion include: continuing to work with the Meat Processor to develop a new application or online tool that makes interpreting and translating the output from the carcass feedback system easier and more convenient for front-line staff; developing professional development programs and new shared-interest action plans that directly meet the needs of the dairy and meat processing companies, communicating the positive outcomes of the Processor Trial to stimulate greater interest across the dairy and processing sectors and undertaking a similar process with other food processing companies in partnership with RDCs to take advantage of the extra human and financial resources that RDCs can offer and adding political weight to the value proposition.

The challenges with continuing this 'opportunity' with the case study processors and/or the wider dairy, meat and processing sectors are numerous but not insurmountable. Based on survey responses received from the Processor Trial Project Team, there is a need to manage expectations about how quickly multi-sectoral collaborative engagements can bring about change. Significant time investments may be needed to generate mutual benefits and value as it is not an instant high impact process. The 'opportunity' needs high level skills and resources to develop tools for tracking improvements in the delivery of agricultural advisory services including the impact on-farm to demonstrate tangible contributions to the

improvement in supply chain performance. If the 'opportunity' is to be expanded to support large scale impacts (e.g. regional scale, sector scale), then the challenge is to create incentives for uptake of the 'opportunity' from limited resource base. One suggestion is for producer and processor levy monies as a co-investment venture to fund a team of dedicated Supply Chain Officers whose remit would be to engage with processors in supporting front-line staff in professional development and training and access to R&D. The 'opportunity' relies on a degree of cultural agility for all actors involved because it requires adjusting to each other's work cultures alongside the participation in non-routine work activities. Finally, the agenda to progress processor provision of extension and advisory services may not always be enough to engage a processor in a collaborative venture therefore the shared agenda may need to be expanded to incorporate context specific processor value.

Conclusion

Opportunity Part A and B established the realities of the opportunity for multi-sectoral advisory system actors to engage with processors in the provision of agricultural advisory services. The case study processors are active in the extension and advisory space where extension and advisory capability is highly valued by the companies for the delivery of a quality core service to their supplier base. Front-line staff from the Dairy and Meat Processor are required to develop and maintain a complex skill set including extension and advisory skills, a general knowledge in farm production and business management, problem-solving capability to address issues with farmer compliance in meeting market specifications and knowledge brokering to refer their suppliers to 'experts' when they cannot provide a solution or offer advice. Processor management in both the dairy and meat example actively cultivate a learning culture and are willing to take up opportunities to engage with others who can deliver training, link the processors to new R&D knowledge, and find ways for the processor to improve internal organisation processes. The value generated from the Processor Trial generally provided private goods for the case study processors and industry goods for the multi-sectoral advisory system actors. Significant value was generated from the Processor Trial project team functioning as a 'third party' to the processing company offering a trustful and independent voice for reviewing internal operations and co-developing strategies to respond to skill gaps, professional development needs, ineffective communications and improving access to R&D.

Although the Processor Trial project team did not set out to collaborate with the case study processors on a path of continuous improvement (organisational learning) or adopt a role like that of a contracted service provider, this is what played out. Collaborative engagement seemed to depend on a continual offering of value by the Processor Trial project team to keep the interest of the processor, and therefore there was limited opportunity to trial other approaches or high-risk activities that could have generated new value for agricultural advisory services. It is interesting to deliberate on the inevitability of the model of collaboration that emerged. A co-innovation process might enrol processor managers, front-line staff, suppliers, agricultural advisory consultants and other multi-sectoral advisory system actors as a working team to generate and progress an 'innovation agenda'. However, such a process might mean too much disruption to the work routines of processors and under-deliver in tangible outcomes and private goods therefore the value proposition could be weakened. The possibilities and challenges in the 'opportunity' are in building on the momentum already created through the Processor Trial. However, the 'opportunity' would benefit from further research working with additional dairy and meat processors and other industries to gain a greater understanding of the range of collaborative dynamics between processors and multi-sectoral agricultural advisory actors. These collaborative dynamics could inform the development of a value proposition framework for engaging food processors in progressing pluralistic agricultural advisory service systems as a co-innovation venture.

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