



Value Chain Innovation Research

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VALUE CHAIN INNOVATION RESEARCH

Overview

Value chain innovation (VCI) builds on the underlying premise that firms can achieve sustainable competitive advantage by taking a holistic approach to the management of the value chain, and a more focused approach to innovation. This involves stakeholders working collaboratively to ensure maximum effectiveness (doing the right things) and efficient allocation of resources (doing things right). This requires that the value chain:

- Understands what consumers value in the product and/or service offer
- Develops a collaborative approach, at strategic and operational levels of the respective businesses, to achieving continuous improvement in the effectiveness and efficiency of the value chain as a whole, for the benefit of all stakeholders.

VCI research is based on two assumptions:

- That the value chain is a system whose function is to deliver value to consumers and sustainable profits to the individual firms in the chain
- That there is sustainable competitive advantage for value chains that are able to harness innovation within and between firms so as to deliver superior value to the consumer.

VCI research is carried out with the firms that make up a value chain. It involves the application of a methodology called Value Chain Analysis (VCA) to:

- Map a value chain and assess its capacity to innovate in order to improve the efficiency and effectiveness of existing processes and to introduce new products and services that *consumers* value
- Identify improvement projects to enable the value chain to develop collaborative solutions for sustainable competitive advantage
- If relevant, provide generic lessons for the industry to which the value chain belongs.

VCI research produces findings that relate to consumer value, material flows, information and relationships. These findings are translated into chain improvement projects focused on innovation.

Examples of VCI research findings about consumers and what they value, include:

- Tapping into consumer concerns about the environmental impact of food production and distribution systems
- Adding value through the provenance and health attributes of a product
- Using a greater understanding of consumer behaviour to assist in achieving strategic alignment between a category manager and a retailer
- Driving new product development, as well as production practices of raw material suppliers, by applying a knowledge of consumer preferences to product attributes such as convenience, health and nutrition.

Examples of VCI research findings about materials flows include:

- Improving the efficiency of material flows (production, processing, storage and transport) to reduce costs
- Benchmarking to identify and adopt best practice
- Improving raw material quality
- Warehouse optimisation to reduce storage costs
- Examining how ordering processes could be refined to improve distribution
- Modelling the impact of different raw material prices on the loyalty and performance of input suppliers.

Examples of VCI research findings about information and relationships include:

- Sharing information between firms in the value chain to improve decision-making so that firms' needs are better met
- Identifying strained relationships that inhibit opportunities for greater efficiency and co-innovation

- Identifying actions by one chain member that shield another member from market forces and invoke a high level of dependence.
- Scoping collaborative innovation opportunities between firms
- Strategies to incentivise innovation where there is a general mistrust of whether savings or added value from innovation will benefit those involved or will be appropriated by others in the chain.
- Demonstrating how “silo” mentalities mediate against developing a coherent approach to innovation.

VCI research recommends improvement projects to firms in the chain being studied. These projects may be within firms or between firms, and they can lead to greater efficiency and more collaboration, and ultimately to more value for the consumer.

Improvement projects in the processed vegetable supply chain

On the basis of the research undertaken in this project, a number of improvement projects were identified which we believe to be of generic relevance to the processed vegetable industry as a whole, from input supply to retailing. It is important that all stakeholders in the value chain recognise that the implementation of improvement projects is a collective responsibility and the benefits thereof must be shared - 'Silo' solutions will always be sub-optimal and will not deliver sustainable competitive advantage.

Project 1: Implementation of improvement projects

This project is seen as the enabling project; it brings value chain partners together to develop an implementation strategy for the other improvement projects.

Objective

Value chain partners will commit time and openness to ensure the VCI analysis results in the identification of opportunities for further efficiencies and value creation. However, there is a risk that the subsequent benefits are not realised because:

- the research findings are not disseminated to all chain partners, in particular within participating organisations and to all growers;
- some improvement projects do not happen at all, are only partially implemented or are undertaken in isolation; and
- the benefits are not shared within the value chain.

Therefore, it is essential that the implementation process is properly managed to deliver significant improvement, both to individual organisations and to the sustainable competitive advantage of the whole chain, and that the lessons are learned for other parts of the participants' businesses. Accordingly, value chain partners need to take ownership of the implementation process.

Project Requirements

There are four successive phases of implementation:

- Improving the understanding of consumer behaviour;
- Devising a coherent strategy for implementing improvement projects covering the whole value chain;
- Implementing specific projects to deliver the strategy; and
- Monitoring and evaluating the projects' impact and the distribution of benefits.

Governing the implementation process requires representatives from the key stakeholders with the authority to:

- Secure ongoing commitment;
- Agree the implementation programme (content and timetable); the strategy (in phase 2) and priorities for phase 3;
- Acquire the necessary resources (budget, information/data and staff);
- Resolve significant problems (delays; funding and other resources; disagreements), and
- Monitor delivery (milestones) and outcomes (Key Performance Indicators).

This must involve the principal value chain partners. However, it could extend to others involved in the supply chain (eg. agronomists, contractors, logistics providers); other stakeholders (eg, government and industry representatives) and external experts. Commitment from the CEO/senior executive level of each of the three main partners is essential.

Those involved must establish the most efficient means of operation. This could involve an implementation committee, supported by a (p/time) implementation manager who would:

- Propose an implementation plan (timetable, resources, milestones, dependencies and risks) and subsequently lead its delivery, including reporting on progress;
- Support/lead/commission individual projects, including investigating external funding;
- Try to broker solutions to problems, escalating them to the implementation committee as necessary;
- Liaise with relevant stakeholders, including the crucial function of engaging with growers; and
- Lead or commission an evaluation of the implementation phase, including:
 - Improvements to the material and information flows and relationships;
 - Increased value creation and co-innovation; and
 - Communication of the projects' findings and outcomes.

Project 2: Contract Design and Negotiation

Objective

The introduction of new contract designs and negotiation processes should achieve the following objectives:

- Enhance relationships by developing trust, co-operation and commitment;
- Ensure the production and timely delivery of the volume and quality of raw material to maximise both the factory's efficiency and the contribution to the value of the final product to the consumer;
- Foster continuous improvement and innovation amongst growers, through either incentives to improve, security to invest or freedom to adopt best practice; and
- Minimise costs of negotiation and monitoring/enforcing, eg farm visits, sampling deliveries, resolving disputes.

To varying degrees, the current practice of a collective negotiation process and annual contracting achieves none of these.

Project Requirements

The improvement project should explore with all stakeholders, with the involvement of as many growers as possible, the options for different contract designs, for example:

- Longer contracts to underpin growers' investment and specialisation in particular crops;
- Larger contracts, for example through collaboration amongst growers, joint ventures or contracting with an intermediary; and
- More incentives within contracts to reward better quality raw material which either adds value to the final product or allows the factory to operate more efficiently.

Longer Contracts

Longer contracts would:

- Allow better planning/budgeting and provide the security to make capital investments, such as centre pivots, or entering into leasing arrangements, and so improving efficiency and/or quality;
- Ensure a more stable supply of raw material;
- Reduce the emphasis on annual collective and individual negotiation processes;
- Underpin a more committed relationship between processors and growers, improving trust, communication, benefit/risk sharing and mutual development of best practice.

Larger/Collaborative Contracts

Larger/collaborative contracts offer a number of advantages by:

- Fostering an environment in which growers can specialise their contributions, invest in machinery, lease/purchase additional land; and
- Developing a framework for joint ventures involving some combination of growers, agronomists, contractors and, if only in demonstration projects, providing fewer relationships for the processor to focus on developing.

Incentives

While the precise incentive structure varies between crops, growers are typically rewarded for:

- reliability - hitting contract tonnage, i.e low variability above or below contract, itself based on an individual grower's rolling four year averages;
- quality - such as no/few weeds, stones, dirt etc; and
- harvesting at peak maturity on the designated day.

Negotiation Process

Having identified the preferred options for contract design, the project will need to investigate the most appropriate negotiation process for each one. Proposals for negotiation procedures should consider:

- How changes would contribute to improving the relationship between growers and the processor individually and collectively. There was widespread criticism of the current system as prone to opportunism and antagonism;
- How to balance more flexibility in contracts and approaches to negotiation, with using the processor's and growers' time efficiently;
- Whether offering parallel individual and collective negotiation systems would be necessary to maintain growers' confidence in the system;
- How any collective bargaining can avoid leaving growers detached from the commercial realities of the value chain, and consequently disengaged from the challenges and opportunities which will determine their future viability; and
- Whether the individuals who would be involved in future negotiation have the appropriate skills to undertake the role effectively, and if not, how to improve their capabilities, for example through training and/or use of facilitators.

Project 3: Rationalisation of the Supply Base

Objective

The current configuration of the supply base is inefficient and probably not viable. There are too many growers working independently. This prevents the expansion and collaboration of growers, and consequently acts as a barrier to the adoption of best agronomic and commercial practice. It also prevents field services from providing an effective link from the field to the factory. The project will explore and exemplify the different models and mechanisms through which growers expand and/or collaborate and interact with field service to achieve better communication and stronger relationships.

Project Requirements

The project will involve three activities:

Developing a range of model solutions for supplier consolidation

- Investigate experience of options from elsewhere in Australia and abroad which helped growers consolidate their holdings to establish a more sustainably competitive industry structure. This might include joint ventures between combinations of growers, agronomists and contractors; encouraging more leasing or supporting land acquisition. It will also need to consider the deterrents to consolidation, for example the impact of land appreciation on the viability of farming enterprises, for while land continues to appreciate, many older farmers will remain reluctant to sell the land, which constitutes their pension. Equally, the alternative of leasing land may be unattractive to leasees because without the capital growth from land ownership, the expanded farm enterprises may not generate sufficient return.
- Identify what support would be necessary to encourage consolidation. Again based on experience elsewhere, and local examples of what has and has not worked and discussions with growers about what deters them from expanding or collaborating, the project may need to address:
 - financial support;
 - training to help growers manage larger enterprises and more employees;
 - model contracts and other legal agreements, for example about maintaining the quality of leased land or how to establish a co-operative, partnership or company; and
 - a third party brokerage service to facilitate leasing proactively, especially when growers are looking for land adjacent to or nearby their own.

Communicating the benefits of consolidation

- Address the cultural misgivings about collaboration and leasing, and the impression created by high profile failed examples. It will need to propose how the potential advantages of different options should be communicated to growers.

Identifying the implications for Field Services

- Examine what level and types of resource Field Services will require to support the different options. This might involve different negotiation and contractual arrangements or opportunities for more effective and efficient communication.

Project 4: Comparing and Improving Growers' Performance and Returns

Objective

The dominance of necessary but non-value-adding activities in the value chain emphasises the dependence of its competitiveness on continual improvements in efficiency. This includes the identification and adoption of best commercial and agronomic practice to ensure the efficient production of high quality raw material. However, there is evidence of high variability in the quality of raw material and inconsistency in the returns growers are generating from the same crops. Benchmarking would allow growers and others to understand why these are occurring and to adopt best practice. There is also evidence of data not being used, either by those generating it or by those with whom it is shared, which represents missed opportunities for improvement.

This project would allow growers to:

- Know their true cost of production and the scope for lowering it and so increase their gross margins;
- Improve the quality of raw material, which under revised contracting arrangements may offer the scope for better returns; and
- Increase their opportunities for internal and external financing to develop their enterprises.

It would also ensure that processors:

- Receive high quality and more consistent raw material; and
- Have a more sustainably competitive supplier base.

Project Requirements

The nature of farming as a large number of small, independent enterprises means that the spontaneous opportunities for sharing business and agronomic information are limited and typically informal. Benchmarking allows growers to adopt a more structured approach to comparing their experiences with similar farms. The process highlights the key improvement areas that help growers set the agenda for their own activities, as well as for external research. Benchmarking covers fairly straight forward commercial comparisons, like the costs per hectare of fertilisers and sprays. However it can also reveal less obvious opportunities to improve returns, for example by examining different growers' contract costs against their expenditure on labour, depreciation, repair and fuel. The discipline of collecting data for benchmarking also helps growers to track their own performance, even before comparing it against others'.

Some growers already compare information informally, and a few are members of small groups who do it more formally. However, there is potential for generating considerable benefits to growers if more would participate, as well as contributing to the competitive advantage of the value chain.

The project will investigate how benchmarking should be targeted to generate the optimum outcomes and what logistics are required. By learning from experience elsewhere in the world, this project offers Australian growers the opportunity to incorporate and develop global best practice.

The project will identify:

- What should be benchmarked? This will include an assessment of what specific agronomic and commercial activities and data offer the prospects of making the most significant improvement to farms' profitability from processed vegetables. It should also investigate where the results of comparing information and subsequent performance improvement would generate the greatest benefits to others within the value chain, whether to growers' direct customers and suppliers or to consumers. It is essential that benchmarking focuses on the priority areas to ensure it minimises the effort required by growers, while maximising the outcomes.
- The most effective ways of collecting and submitting data. This will need to include practical issues, for example how growers should record information in the field about chemical applications etc, where the conditions are inherently dirty and often wet. It also needs to find the most efficient and reliable way for growers to submit data, to make participation easier while ensuring conclusions are robust. This element of the project should examine proven practice in other parts of Australia and abroad.
- Other than comparing data from the growers involved, what else might be involved? This should include a review of what other data sets are already generated in the value chain and should be integrated. Additional activities might involve inviting outside experts to help with particular issues or a programme of farm visits to share best practice. The project should examine the scope for comparing Tasmanian data with other national and international data. This will also need to consider what other data is publicly available and whether it could be analysed so as to make it relevant. For example, the economic background to farming in some countries may be so different as to make any comparison meaningless.
- To what extent is data commercially sensitive, and where it is, how should it be handled to reassure those involved?
- Other than growers, who else should be involved? This should include stakeholders who have data or expertise to offer, or partners in the value chain who might gain from their involvement. Potential collaborators include the processor, agronomists, contractors, seed and seedling suppliers and a university.
- How should the process be organised? Who should lead the benchmarking project? Should growers be organised as regional groups, which therefore include farms with similar conditions? If so, should there also be a mechanism for comparing between regions? How should the findings be communicated to growers?
- How should recommendations be turned into action? Agronomists are likely to have a key role here, but other training, support packages or individual action plans may also be required.
- How should the process be funded?
- Demonstrating the benefits of comparing performance. Growers will need to see that their involvement will produce benefits for them in terms of improved agronomic and business performance. The project should therefore highlight experiences elsewhere in Australia and from abroad which exemplifies how farmers have gained from benchmarking projects. This should show how they are not simply a means of generating cost savings which then are appropriated by other members of the chain or in price reductions for consumers.

Project 5: Contingency Planning

Objective

The objective of this improvement project is to examine options for:

- Reducing the cost of processing and storage; and
- Reducing supply risk, for example from fluctuations in consumer demand which are more difficult to forecast.

Efficient storage is critical to the competitiveness of the value chain, firstly because it is such a significant proportion of the total cost and secondly because unlike some manufacturing value chains, raw material is not pulled through the supply chain to meet orders and

consumer demand. The seasonal nature of vegetable production means that processing schedules are pushed by the availability of raw material. Product is then put into storage to replenish Work In Progress stock cover, and then pack out takes place on the basis of shorter term forecasts of customer orders, and actual orders pull finished goods from storage into shipping. Consequently, while carrying significant inventory is inevitable, all options for its minimisation should be assessed.

Conversely, the impacts of the drought have exposed certain risks to the sufficiency of supply. The drought led to higher fresh produce prices, with a subsequent very significant increase in demand for frozen vegetables as consumers switched from fresh to frozen. Accordingly, the objective of the improvement project is to ensure that these two inter-related factors are assessed for costs, risks, impact on consumer value and behaviour and ultimately the competitiveness of the value chain.

Project Requirements

The improvement project should explore the costs and benefits of supplementary sourcing and/or processing at different locations in Australia, and/or increased counter seasonal sourcing through imports, either as an ongoing strategy or on a contingency planning basis. This should examine whether alternative strategies would:

- Introduce more efficient processing and storage, for example by spreading processing across the year and reducing peak volumes of Work In Progress; and
- Reduce the risk of a recurrence in limited availability of some product lines. This will need to incorporate scenario planning to consider potential medium term impact of climate change on the availability and cost of fresh market produce and vegetables for processing. For example, it may involve modelling raw material supply as growers react to changes in the relative price of fresh market produce and processing vegetables, and potentially to the impact of the availability/cost of water. It should also consider the impact of relative prices on Australian consumers' demand for frozen vegetables. Scenario planning should also look at other potentially significant factors affecting the costs of both indigenous and imported supply, such as sharp rises in fuel prices.

Growers distrust the quality of some imported produce, and are sceptical about the equivalence of quality assurance schemes and compliance with them. The project could review any evidence for these concerns, so that growers, processors, retailers and ultimately consumers are fully and mutually informed of the potential risks as well as opportunities of sourcing from some locations, and that consistent quality assurance costs are applied to all growers providing raw material, regardless of their location.

On the basis of this analysis, the improvement project should propose a sustainable and competitive strategy for the value chain which maximises consumer value while minimising costs and risks.

Project 6: Communication and alignment

Objective

There is evidence that many growers do not understand processors' requirements or what consumers value in the end product. This has a number of consequences:

- It detracts from the grower-processor relationship. Misunderstanding breeds mistrust, and this deters growers from making longer term commitment and investments which would benefit both them and the rest of the value chain;
- The decisions growers are making, both strategic and day-to-day, are not always aligned with the requirements of the value chain;
- Contractual requirements, in particular raw material specifications and field officer interventions, become the main means of influencing growers' decisions and crop management. However, raw material specifications are imperfect in terms of prescribing, monitoring, enforcing and improving quality standards, and field officer interventions have been criticised as removing too much responsibility from growers.

In addition, the standardisation necessary in this approach reduces the scope for innovation and development of new production practices.

Accordingly, the project will seek to improve grower understanding of the factory's processing requirements and of the processor-retailer strategy for marketing and maximising the value of frozen vegetables. This project will both contribute to and be a product of building greater trust in the relationship. It will also improve growers' performance and their contribution to the value chain's competitiveness by reconnecting them to opportunities and challenges faced downstream.

Project Requirements

There are several reasons why the information flow from processors to growers is not fully effective, including:

- The information is not communicated to growers, potentially because the value of communicating it is not understood, or the responsibility for communicating it is not clearly assigned;
- The information is communicated at the wrong time and/or in the wrong way for growers to absorb it; and
- Growers are not receptive to the information, for example because they do not see its relevance.

Accordingly, this project will identify what information growers need in terms of processing requirements and value chain strategy; how and by whom this information would be communicated most effectively, and how to encourage growers to integrate this information into decision-making, which will link to the other improvement projects on new contracting arrangements, incentives and benchmarking.

The project will involve:

- Evaluating what information is most crucial to building trust, and improving efficiency and value adding within the chain. The research highlighted that growers are part of a large number of information flows. Across their farming enterprise, they will be part of many more. Managing that information is a major task, and this project must not simply add to that burden. Rather, through consultation with growers, processors and others, it should identify what information would help to engage growers as members of the whole value chain and allow them to maximise their contribution to it.
- Examining how information should be communicated. It is unlikely that one solution will fit all growers' preferences. Accordingly, the project will need to investigate how information could be most effectively relayed to different growers. It may involve discussions with growers, as well as a review of practices elsewhere, potentially not only within agriculture but other sectors where communicating with disparate stakeholders/suppliers is important. A variety of communication channels will need to be considered, such as grower meetings; Internet portals, newsletters and factory and farm visits.
- Encouraging growers to be receptive to the information. Growers will need to see the relevance of the information for improving the performance of their enterprises.
- Proposing how the project's recommendations should be implemented. Improving communication upstream is likely to need an ongoing effort, not simply a short-lived initiative. Accordingly, implementation of the recommendations will need to be systematic yet efficient. The project should identify what communication skills and resources will be required, how this might be garnered from a variety of potential partners both within and outside the value chain, and how responsibilities should be allocated.
- Evaluating improved communications. The recommendations should include cost efficient performance measures to monitor any consequent improvement in communication and related performance, and to allow the outcomes of different components of the communication strategy to be evaluated.

Project 7: Incentivisation of innovation

Objective

There are four types of potential innovation within the value chain:

- Agricultural R&D innovation
- New product development
- Process innovation
- Systems/logistics innovation.

This improvement project should ensure that all four types of innovation are stimulated and adopted. This will require the development of systems which foster both internal innovation and co-innovation between two or more partners in the chain, and ensures that members of the chain are suitably incentivised to create innovation and that the benefits are duly shared.

Project Requirements

Innovation is presently dominated by new product development and partners working in isolation. The improvement project needs to address how other forms of innovation can be stimulated and wider engagement, including working across organisation boundaries, can be achieved.

The centre for innovation within the processed vegetable chain is largely in the processor's marketing division, and other parts of the chain are neglected or are neglecting the scope for innovation.

The improvement project should review the systems for capturing and developing potential innovation of all four types throughout the chain. This should include:

- How innovation is defined and understood;
- How ideas are captured and developed, for example whether growers' innovative ideas are identified, evaluated and advanced;
- Whether the systems are biased towards incremental rather than radical innovation;
- How systems ensure innovation is adopted within the chain, for example amongst growers, within management systems or in contractual arrangements;
- The extent and impact of disincentives for innovation, for example the negative impact on Key Performance Indicators caused by disruption when implementing new process innovation or launching new products;
- How understanding of consumer values and behaviour drive the identification, prioritisation and development of innovation proposals;
- The potential for enhancing the co-innovation culture in the chain, for example by encouraging value chain partners to be responsive to each other's ideas and requirements and to collaborate in projects;
- What policies and procedures exist for rewarding the initiators of innovation and sharing the benefits of innovation, and whether incentives are
 - Sufficient;
 - appropriately targeted;
 - incorporate production, processing and systems/logistics innovation as well as product development;
 - distinguish between incremental and radical innovation; and
 - engender engagement throughout organisations and between value chain partners.

Project 8: Understanding Consumer Behaviour

Objective

The main aim of this improvement project is to explore ways in which supermarket data can be used more effectively, along with other sources of consumer information, to assist retailers and processors in achieving strategic alignment with respect to the marketing and merchandising of frozen vegetables. In so doing, this project will provide retailers, processors and ultimately growers, with:

- a better understanding of what consumers value across the frozen vegetable category in general and the relative importance of price and provenance;
- a process for determining what consumer information (secondary and primary) is most appropriate for which marketing/merchandising decisions, thereby improving the cost-effectiveness of any investment in consumer insight; and
- a mechanism for developing closer relationships between key stakeholders in the value chain.

In addition, while the focus of this improvement project remains processed vegetables, it is anticipated that the process improvements arising from this project will benefit all the key stakeholders beyond their involvement with processed vegetables and in the way they do business with other customers/suppliers.

Project Requirements

One of the main findings from this research was the lack of understanding of consumer behaviour (i.e the extent to which different product attributes are valued by distinct consumer segments).

Understanding the drivers behind consumer purchasing decisions is critical to the longer term development of the frozen vegetable category – bringing clarity to category planning, ranging decisions and brand management - and will help the members of the value chain (retailers, processors and growers) achieve a greater degree of strategic alignment.

The project will have three stages, as follows:

- **Stage 1** will explore, in some detail, the information currently used by processors and retailers. This will identify gaps in their knowledge of frozen vegetable consumers as well as duplication of effort (and expenditure) and the potential for greater synergy in the development of consumer insight going forward.
- **Stage 2** will explore the potential use of supermarket loyalty card data to better segment the frozen vegetable market.
- **Stage 3** will involve additional primary research, the nature of which should be determined after completion of stages 1 and 2, to determine the attitudes, perceptions and motivations that have driven the behaviour of distinct segments identified in stage 2. This could take the form of a targeted consumer survey or a series of focus groups, with specific emphasis on understanding the purchase drivers amongst distinct consumer segments. It is during the third stage of the project that consideration will be given to the different kinds of consumer insight that are needed to support specific marketing, merchandising and NPD/R&D decisions, how they should be generated and who should take responsibility for design, implementation and dissemination of findings to key stakeholders. This will provide long term benefit to the value chain as a whole and processors in particular (as the stakeholder with the greatest share of expenditure on consumer information and consumer research).

Project 9: Adding value through varietal trialling and agronomic practices

Objective

The main aim of this improvement project is to identify the extent to which consumer preferences can be integrated in the varietal selection process and research into improving agronomic practices. This project will develop a process which integrates consumer preferences in these research programmes, resulting in a more consumer-focused R&D strategy for the whole chain and so increase the opportunities to add value as well as reduce costs.

Project Requirements

Varietal trialling has historically been driven by agronomic and processing requirements. The missing element in the R&D programme is whether new varieties and agronomic techniques deliver better consumer value.

There is limited co-operation between seed companies and processors in terms of sharing and trusting each other's data. Since the trialling of plants for their suitability for specific soil types, growing conditions and factory processing is expensive, more collaboration amongst chain partners offers the scope for greater efficiency.

This project will:

- Assess which consumer values are most affected by varietal choice and farming practices;
- Identify which research programs are most appropriate for incorporating consumer values, both within the value chain and those of external partners;
- Propose specific systems and projects which would increase consideration of consumer value in these research programs, and
- Recommend how best to encourage collaboration amongst all relevant chain partners to identify priorities, deliver research projects and implement conclusions. Depending on the particular programs and projects, this may involve engaging seed suppliers; growers and their industry bodies; agronomists; planting and harvesting contractors; field services and factories, universities and other research organisations.

Project 10: Water Management

Objective

The growing phase of primary production can be seen as one of the most important parts of the cycle, with this stage affecting yield, quality and profitability of the crop. Aids are currently available to farmers in the form of moisture monitoring advice from agronomists, as well as monitoring devices. However, of those directly asked, no growers used moisture monitoring devices, and few used agronomists in this way. This project would seek methods of "helping farmers to help themselves", and identify suitable incentives to let them do so.

This project would allow growers to:

- Water more efficiently and more effectively;
- Have a sounding board against which they can compare their own experience; and
- Improve the reliability of yield and quality of their crop.

It would also ensure that processors:

- Receive high quality and more consistent raw material; and
- Have a stretch option of marketing their supply chain as more water conscious. This may not require less watering, however it will be possible to show evidence of best practice in crop watering.

Project Requirements

Water is becoming a scarce resource within Australia, and awareness is increasing within several groups. This includes growers, who are aware that water costs are increasing and available levels decreasing; and consumers, who are becoming aware that water resources are limited and are becoming more conscious of where and how water is used. Several capital cities are currently under tight water restrictions, making this a high visibility issue.

The project will investigate how effective water management can be developed in a way that ensures farmer buy-in, competitiveness and accountability. By monitoring and evaluating the effectiveness and capabilities of current systems, as well as potential management and data collection capacities, both farmers and processors should have the opportunity to benefit from this project. This project will include:

- What is the best method of water measurement and application? Data will be gathered from interstate and international growers on best practice and systems, regularity of monitoring, and the most appropriate moisture level range.
- An analysis and collation of prior (and potentially other) projects, their impact, issues and benefits, including methods of irrigation (for example T-Tape), management and monitoring apparatus (previous projects have been undertaken by DPIW and other parties). This could be formed into an easy access database which will provide a basis to compare and analyse the potential of new projects.
- Finding the most effective ways of collecting and submitting data, which will allow the grower to monitor their own performance, as well as enable the project management to create and investigate an overall “picture” of the state.
- To what extent is data commercially sensitive, and where it is, how should it be handled to reassure those involved?
- Who is best to manage this project? This could be propelled by an individual organisation or by a group, including the key stakeholders: processors, grower's organisation, universities and agronomy companies.
- Other than growers and managers, who else should be involved? This should include stakeholders who have data or expertise to offer, or partners in the value chain who might gain from their involvement. Potential collaborators include the processor, agronomists, irrigation companies, and the university.
- How should the project be organised? Should there be incentives for farmers to purchase and use apparatus, or take part in monitoring programs? Should growers be empowered to individually record watering programs as they currently do with the spray sheets, or would it be undertaken by an outsider to the farm? Whichever way the process goes, the information available from the moisture monitoring should be timely in that it will aid a farmer in their decision making, rather just re-assuring farmers they made the right decision, or the data not even being utilised.
- How should the process be funded?
- Demonstrating the benefits of water management to each segment of the value chain, for example:
 - Growers may see benefits in terms of water used and effectiveness, leading to increased performance;
 - Processors may see increased performance of their processing facilities leading from better resources, as well as increased marketing benefit;
 - Retailers may see consumer preference and altered purchasing patterns; and
 - Consumers may see the benefits of good water management, increasing the products' intrinsic value during purchase, and may even increase advocacy of the product.

Value chain analysis – Methodology Guide

Introduction

Value Chain Analysis (VCA) involves a rigorous, systematic and objective assessment of the scope for improvement in the efficiency and/or effectiveness of existing processes along the value stream. Accordingly, the objectives of VCA are threefold:

- To assess the innovation capacity of the value chain by examining its ability and potential to improve the efficiency and effectiveness of existing processes, and to introduce new products and services that consumers value and are willing to pay for.
- To identify improvement projects that would enable the chain to embrace the principles of value chain management and to work towards collaborative solutions that involve multiple stakeholders and an acceptance of the need to change what is done, as well as the way it is done; and
- To provide a catalyst for change.

The management and control of the value chain is captured in an assessment of the relationships between the different stakeholders which, coupled with the effective flow of information, enables the optimisation of material flows. Consequently, the methodology focuses on three key issues:

- The dynamics of information in the value chain from final consumption through to primary production and input suppliers and back again – how inclusive, transparent and responsive are the information flows in the chain; to what extent are stakeholders' decisions (what to produce, when to produce, how to produce) pulled by what consumers value?
- The creation and flow of value, in the eyes of the final consumer, at each stage in the value chain – how many of the production and processing activities truly add value? How much investment is being made in these critical activities? How many are necessary but do not add value (these should be completed with minimal resource allocation)? How many are unnecessary (wasteful activities must be eliminated and resources re-allocated to drive value creation and efficiency)?
- The nature of relationships – how much trust exists between different stakeholders? What is the nature of communication within and between organisations? What evidence is there of organisational commitment? How are risks shared and the assumption of risks rewarded in the chain? How is value created and shared along the chain?

In an effective value chain, however, firms do not operate in isolation. Partnerships between firms give rise to the opportunity for collaborative innovation (co-innovation). Co-innovation becomes possible when there is a shared vision between the partners; compatible structures and processes; open communication, co-operation and opportunities for mutual benefits, and the presence of trust and commitment. Critically, partners must adopt an open (learning) attitude in whatever they do together to create an environment which facilitates and promotes co-innovation as a means of continuous improvement.

The Process

Each VCI project is a six stage process.

Stage 1 - Securing Commitment

The insights from the research and the realisation of the potential benefits from the improvement projects are dependent upon participants' commitment and openness. Accordingly, the involvement of all value chain partners and/or their representative organisations is critical to gaining access to key stakeholders and ensuring effective dissemination of the results. At the outset a project team is established, with an independent chairperson, to ensure that the project progresses according to the research plan and to facilitate the removal of barriers encountered along the way. This group should comprise senior management from chain partners, who are required to authorise staff to co-operate and be honest and open with the researchers.

Stage 2 - Confidentiality and Privacy

Before the data gathering begins, confidentiality agreements should be put in place with the value chain partners. These safeguard the commercial and personal sensitivity of the information provided, thus encouraging all parties to be candid during discussions and in sharing information.

Stage 3 – Selecting the value stream

This involves the selection of a specific value stream as the focus for improvement, where a value stream is typically defined as a specific product family serving a specific consumer or market segment. When the number and diversity of products is high, the selection of a specific value stream is usually guided by the relative importance and/or the recognition of problems associated with specific product lines.

Stage 4 - Establishing what it is that consumers value

The most critical aspect of value chain analysis is whether consumer value underpins every activity and decision. Failure to identify what value means to the final consumer results in the misallocation of resources to activities that are unnecessary or wasteful. The analysis should identify how much and where value is currently added, and the opportunities for adding more value. To do this, it is essential to establish an objective and comprehensive definition of what consumers value in the final product. Unless this information already exists, it will require consumer research to be undertaken at the beginning of the project. This could involve both qualitative (focus groups) and quantitative (face-to-face/telephone interviews) research. The focus groups identify the value consumers apply to different product attributes and the potential interest in new product variants. The relative importance of the multiple product attributes identified in the focus groups and the scale of the opportunities are quantified through the survey.

Stage 5 – Mapping the current state

This involves the graphical representation (process map) of the material flows, information flows and relationships within and between the businesses that constitute the value stream for existing products, from inputs to primary production through to final consumption.

Stage 6 – Identifying improvement projects

The generation of a current state map facilitates the identification of bottlenecks and weaknesses in the current value stream, within organisations (i.e. between functional departments) and between trading partners. The final stage in the methodology is the identification of improvement projects. The emphasis is on inter-organisational improvement opportunities, as these are notoriously difficult to achieve and, as a result, can deliver benefits that are difficult for other value chains to replicate, providing a potential source of sustainable competitive advantage.

Mapping

The project team should map the material flow, as far as practical by physically walking the chain from the provision of agricultural inputs to sale of the final product to consumers. This should involve all the links in the chain. The purpose of the diagnostic approach is to identify areas for further investigation through improvement projects. Accordingly, it is not necessary to measure time, volumes or costs along the material flow.

Data on both flows and the chain's relationships are assessed against a range of criteria to identify:

- *for the Material Flow*, which activities
 - add value, are necessary but non-value adding, or are wasteful (i.e. the whole activity is necessary); and
 - have scope for increased efficiency, reduced waste or more added value.
- *for the Information Flow*, which individual flows with respect to different functional activities (eg. quality control, sales, distribution) and at different levels (eg. operational or strategic)
 - are strong, partial or weak; and

- are uni-directional or two-way, and for the latter whether the information flows equally in each direction
- for *Relationships*, whether inter- and intra-organisational relationships within the chain
 - are strong, basic or weak.

Within all areas, the actual and potential scope for innovation and co-innovation is evaluated, along with the extent and nature of incentivisation between and within partners along the chain.

Validation

Two approaches can be taken to validate the findings of the analysis. With individual farmers and some other chain members, the emerging findings can be validated through repeat interviews. This ensures that all comments have been accurately interpreted, and all relevant facts unearthed. With the main stakeholders, ground-truthing presentations can be given to explain the emerging findings relevant to their part of the chain and so allow stakeholders to criticise and challenge, and accordingly provide quality assurance to the conclusions. This also provides an opportunity for stakeholders to comment on the proposed improvement projects and how much of any sensitive material can be shared with others in the chain.

Report

The end product is a diagnostic assessment which highlights the strengths and weakness of existing processes (for the production and distribution of existing products/services and the development of new ones) and the opportunities for improving competitiveness through the subsequent execution of improvement projects.