

S  
C  
H  
O  
O  
L

O  
F

M  
A  
N  
A  
G  
E  
M  
E  
N  
T



## **WORKING PAPER SERIES**

**Improving supply chain strategy for  
red meat: a comparison between  
Australian and UK 'lean' practice**

**Ian Sadler**

[ian.sadler@vu.edu.au](mailto:ian.sadler@vu.edu.au)

4/2004

# Improving supply chain strategy for red meat: a comparison between Australian and UK 'lean' practice

*Ian Sadler*

Senior Lecturer in Operations Management  
Victoria University

## **Abstract**

*More efficient operation of supply chains is important because of increasing competition in Australia's evolving market economy. Much future competition will be between supply chains rather than individual companies. Work in a number of other industries has led to major improvements in lead-time, quality, customer service and profitability. Studies in Australia and Britain, whilst in a preliminary mode have enabled value chain members to meet together and achieve business efficiencies. Two methods for improving chain efficiency are being developed. A new process called Strategic Operations and Logistics Planning (SOLP) enables meatworks managers, working in a team, to derive strategic plans for several supply chains. In the second method, researchers in Britain use the Value Chain Analysis (VCA) method, to work with senior managers at abattoirs, meat processors and supermarkets, and with farmers.*

*The aim of the paper is to combine concepts with practice in this important, growing area of the processes that enable red meat businesses, and others, to develop and implement strategies for entire supply chains. The paper briefly describes examples of the application of both SOLP and VCA and compares their advantages and disadvantages.*

## **Situation Addressed**

The production, processing and distribution of red meat typically involve four different companies at various 'production' stages and several service companies providing transport and packaging. Figure 1 shows a generic supply chain structure for manufactured meat products. Typically these companies engage in arms-length commercial negotiations, which aim more for individual survival and short-term profit maximisation rather than coherent operation of the whole channel from farm to end customer. The situation is complicated by the existence of several different product families, such as retail meats for supermarkets, food service meats and portions, processed and cured meats, butcher's supplies and, in Australia, exports of chilled and frozen quarters and boxed-boned meats. The firms involved comprise farmers, abattoirs, boners, meat processors, in supermarkets merchandisers and store operations, cold store operators, food service providers and export traders.

Of particular interest are individual situations where companies, retail chains, traders and farmers face numerous problems in developing and operating profitable food manufacture and processing businesses. Four such situations, or cases, are:

- A middle-sized Victorian abattoir ensures supply of cattle and sheep from graziers to produce carcass and boned meats for domestic retail and food service customers. Sales of hides and other by-products contribute to profitability.
- A large Victorian smallgoods factory faces the challenge of fluctuating pig meat prices, capital re-investment and workforce training. It produces a range of cured, preserved and fresh products for sale to supermarket chains, a route trade and industrial customers. In the face of short time frames and price pressures, how can this firm work with customers, piggeries and abattoirs to secure a more profitable market position?

- An English beef meat processor gets its supplies from Hampshire and Argentina to provide a range of portions and value added meats for a chain of UK steak restaurants and an elite supermarket chain.
- A group of Cotswold, UK, sheep farmers try to create their own brand of lamb in spite of European Community regulations on animal welfare, movement control, documentation and public 'roaming' (walking over 'rights of way' on farm land). These farmers work with a small, local abattoir to provide a range of fresh, quality lamb cuts for sale in butchers' shops and to local pubs and restaurants.

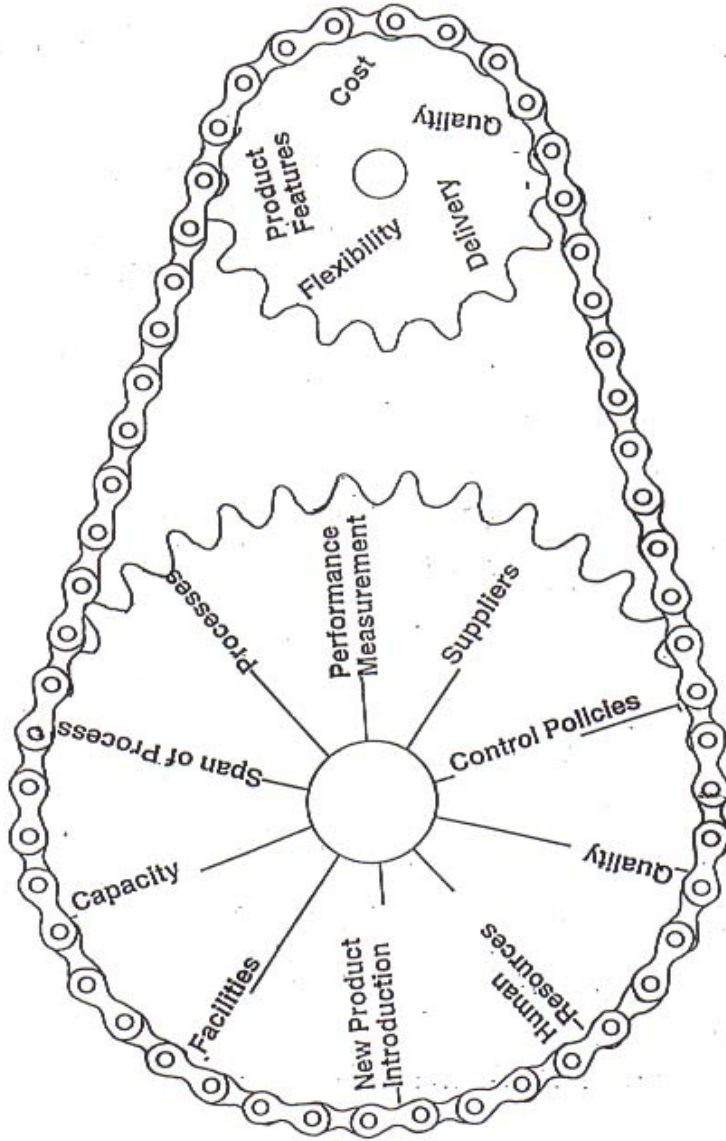
This work concentrates on forming a relationship with a focal company (processor or distributor) to help it generate strategic plans for operations and logistics areas. The existing strategic plans are generally strong on market and financial strategies but lack logistics and coherent information plans. Once this focal company has mastered strategic thinking through to specific action plans for the next 1-3 years, we help it to involve other value stream partners in the quest for wider strategic plans for chosen categories or groups of products.

### **Relevant work in literature**

Research into processes for strategic operations planning has defined the steps and procedures required.

Figure 2 (Platts 1994) summarises the underlying concepts. The bicycle chain links order winners, on the right, with policy areas, on the left. The concept of order winners refers to the output areas which customers require. The supply chain must achieve better outcomes in these areas than its competitors if it wishes to gain a superior share of the business (Hill 2000). The policy areas around the left wheel represent operations and logistics process areas in which action should be taken to improve the specific order winners desired (Platts & Gregory 1992).

Figure 2. Concept behind the SOLP process

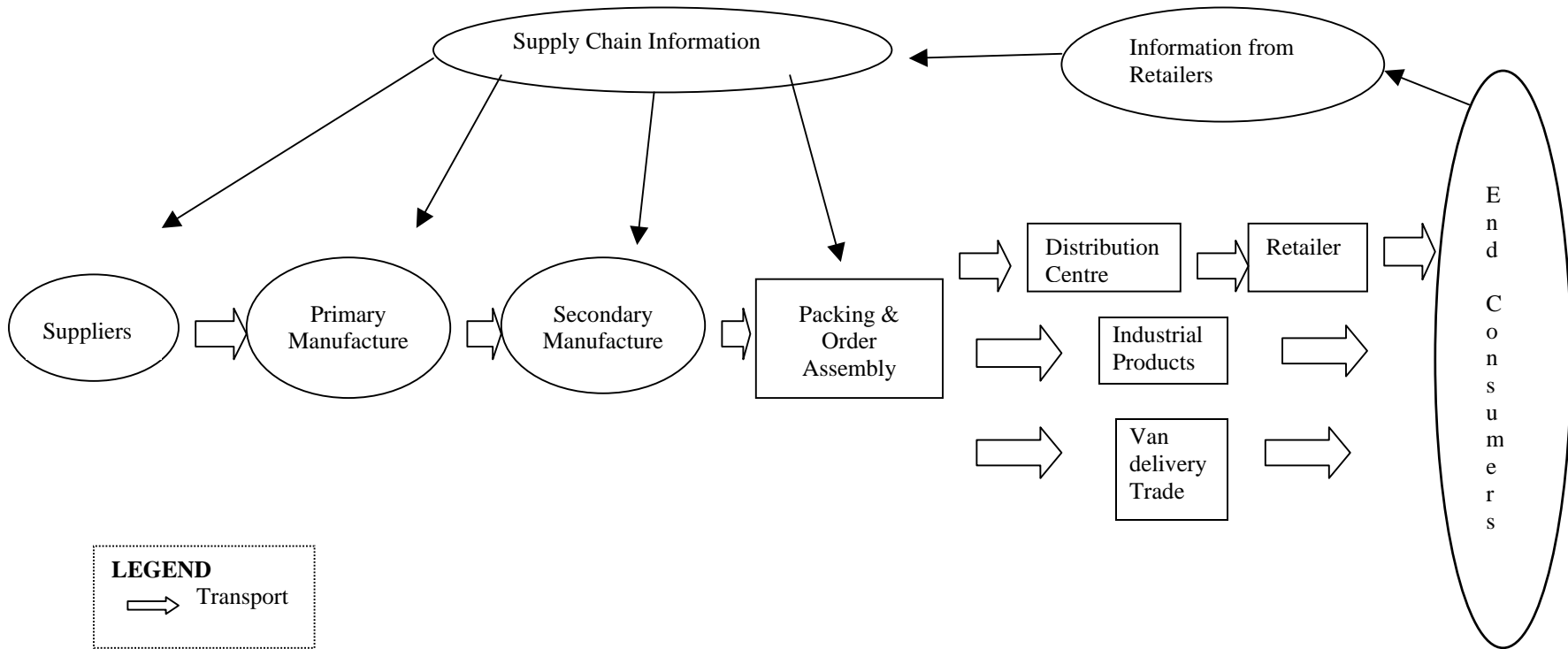


Planning processes for the operations of entire supply chains require examination because business competition demands coherent strategies from them (Sadler 1999). The aim is to formulate a set of strategies, represented by a series of actions, which will achieve the future aims of all partners in the supply chain in sourcing, manufacturing and distributing products to satisfy customer needs, at a profit. Figure 1 illustrates the general structure of a meatworks supply chain. The enterprises in the lower part of the figure are called links. If an individual enterprise carries out its own operations and logistics strategy, it will tend to sub-optimize its own part of the chain. In the car industry Womack and Jones (1994) refer to part of this planning process when they say, *The assembler and the supplier go over every detail of the supplier's production process looking for ways to cut cost and improve quality*. Further Jouffrey and Tarondeau (1992) suggest that

The search for coherence between products and technologies should spread across all layers of the organisation, and to all industrial activities management modes. ... the third (management mode) is material flow management, that is inter-operations or stock operations in the product manufacturing cycle as a whole, from the supplier to the customer.

A greater range of alternatives would be generated by joint planning between all firms involved in the entire supply chain. Therefore, it is very likely that planning conducted in concert by all members of the supply chain would enable better overall strategies to be derived than if each made separate plans, working at arm's length. This requires some loss of sovereignty by each company, which could be a stumbling block for such joint plans. Joint planning would achieve part of the 'lean enterprise', proposed by Womack and Jones (1994), which they believe would lead to dramatic improvements in supply chains.

The supply chain planning processes investigated in the present research have some similarities to that found by Christopher (1997) for a marketing perspective. These processes aim to move supply chain managers away from an introspective view of the world. However, they do not reduce the need for the operations and logistics functions of each company to co-ordinate their strategies with those of other internal functions (Mills & Gardner 1995).



**Figure 1 Links in the integrated Supply Chain for processed meat products**

This figure illustrates a generic supply chain for abattoirs, boning rooms and smallgoods manufacturers. Depending upon the extent of integration of manufacture, there may not be any transport between the manufacturing stages.

Value stream management has evolved from part of marketing in a particular company, through integration with operations in that company, to common approaches to the design and flow of materials and products along channels by all member companies (Bowersox, Closs & Cooper 2002). I argue that this evolution of stream management implies the need for a similar evolution of strategy derivation. Stevens (1989) argues that a strategic perspective is required for the supply chain that both develops objectives for the chain as a whole and specifies its shape and organisational structure to achieve a competitive package. He considers that there is great potential to recognise the connections between component parts of the supply chain. This ensures a good fit between its design and operations and the companies' competitive strategy so that real benefits flow from the impact of increased market share and a lower cost base. The present work starts from an integrated perspective rather than from either end of the supply chain.

The proposed process required to form strategy for an integrated supply chain is now developed from processes designed for operations strategy. There has been some research into partnering between two supply chain members (Lambert *et al.* 1999). In the context of logistics partnerships between a major company and its third-party service provider, this research found:

A key element of any successful partnership is joint planning. When the Whirlpool / ERX (logistics service provider) partnership first started, there was not a high level of joint planning, but both firms felt that it was necessary. Today, joint teams are assigned to address issues and problems and do long-range planning. Whirlpool distribution centre managers and regional personnel meet regularly with ERX representatives to discuss current performance, possible improvement, and long-range plans.

Some research has partially addressed planning processes for integrated supply chains (Fabbe-Costes and Colin 1994). Work by Sadler and Hines (2002) specifies a process called *Strategic Operations and Logistics Planning (SOLP)* and investigates how a team of managers from the companies in a supply chain can be helped to formulate strategic plans for operating the whole chain, to benefit each company and the whole chain. The process has been applied in several Australian meat processing supply chains, with encouraging results.

The second method, *Value Chain Analysis (VCA)*, draws heavily on the British Industry Forum model and the work of Womack and Jones (1994, 1996). This model focuses mainly on inputs or determinants (after Fitzgerald *et al.* 1991) such as quality levels and throughput time. By controlling these determinants, results, which are mainly financial measures, improve. Determinants can be measured and controlled in real time, whereas results are largely lagging outputs.

Value Chain Analysis is an established methodology for analyzing and improving resource utilisation and product flow within manufacturing processes (Simons *et al.* 2003). VCA has been applied in operations management and supply chain management (Womack and Jones, 1996) and it is also known as the 'Lean' paradigm. The method involves assembling a cross-functional team from the key firms involved in the value chain of a specific product-group. This team is trained in a number of supply chain mapping tools and then collectively carries out data collection to identify wasteful activities. This method consistently reveals waste elimination opportunities (Hines & Rich 2000).

A typical VCA project comprises four stages. Firstly, team members from participating firms are introduced and a workshop is conducted to explain the mapping tools. Secondly, a workshop is held to produce a high level map (Rother & Shook 1998) of the key activities in the current state of the integrated value chain. This requires the main physical and information flows and performance measures to be identified. Inter-firm problems are identified on the map and analysed to find waste elimination opportunities. Thirdly, fieldwork is carried out at each of the participant firms to map sequential activities and pinpoint intra-firm waste for elimination. Finally, the team meets to review the waste elimination process and construct a collective vision of a future state. This is a vision of what the value chain could look like in a few years time if actions were taken to remove existing constraints. These actions are scheduled by the team which, hopefully, has formed the nucleus of a permanent continuous improvement team for the whole supply chain (Simons *et al.* 2003).

Next the methods and application of the two methodologies are explained.

## **SOLP process in Australia**

### Method

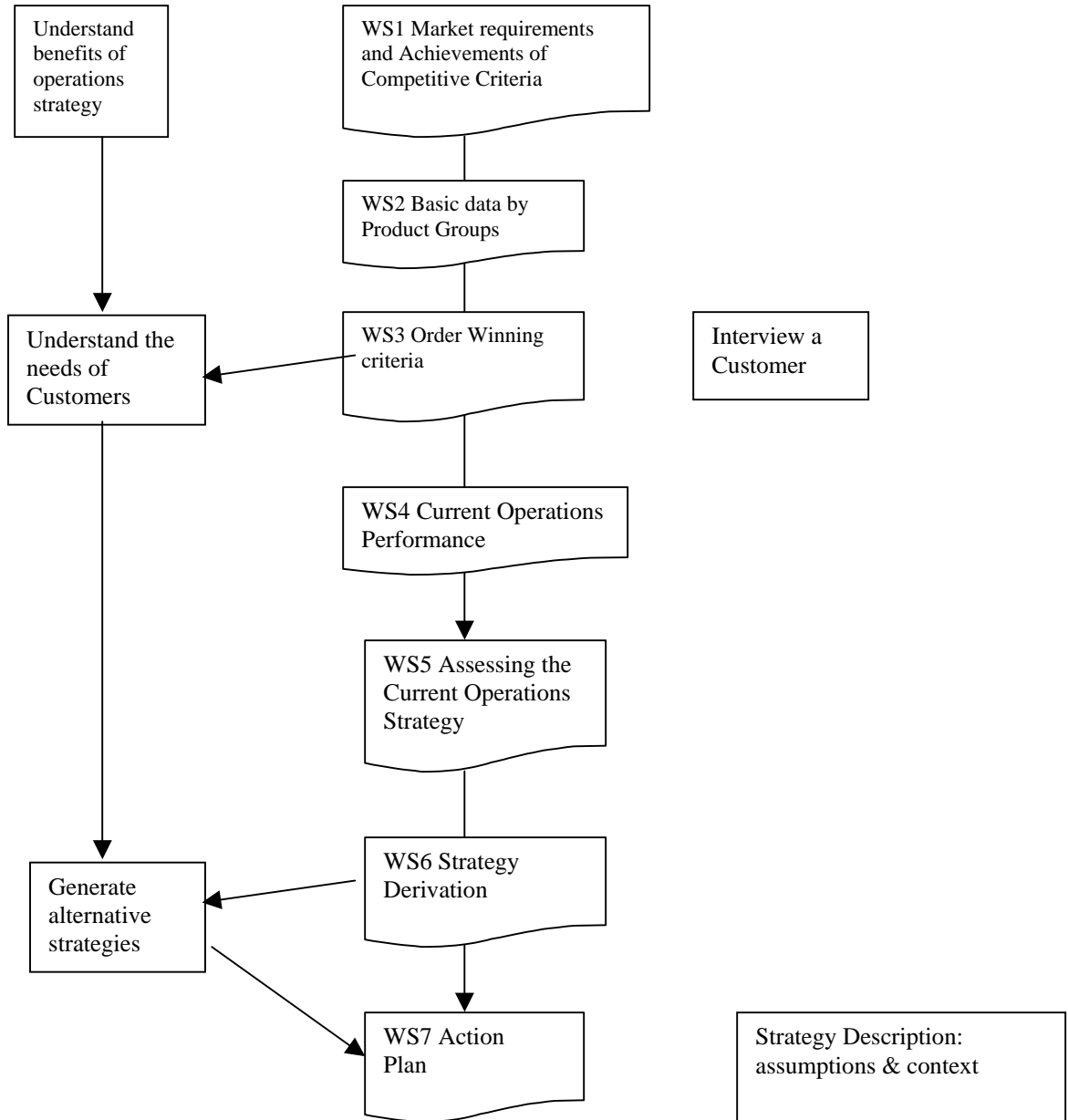
The Strategic Operations and Logistics Planning process is intended to involve producers, meat processing and manufacture, distribution and retail businesses for operations, marketing and logistics functions of all partners in the value stream. A team of managers from those companies meet to think through the order winners for each product group (Hill 2000) and decide the strategic actions in policy areas needed to become more competitive. The thinking is assisted by filling in seven worksheets (Platts & Gregory 1990), as described below. The method we follow when carrying out SOLP with a team has the following general arrangement:

- A team of directors, managers and operators involved decide the actions that are required in policy areas, having regard to customer demands and needs expressed, using a value chain approach.
- Consultants act as facilitators within an Action Research methodology.
- The planning team is supported by worksheet materials developed during seven workshops of two hours duration over, say, two months.
- Participation and interaction of different levels of management is maximised.
- The process produces action plans for the nominated product groups.

Planning addresses a set of business objectives nominated by the focal company and its partners. *SOLP* follows twelve steps which involve filling in seven worksheets and other actions, shown in Figure 3. These steps will now be described.

Worksheet 1 comprises two steps. In *Step 1*, team members assess the market requirement on a number of given competitive criteria for each product group (PG). The average of these individual assessments forms a 'profile' of market needs. *Step 2* repeats *Step 1* for the Achieved Performance by the supply chain of the competitive criteria for the same PG. The average assessment for Market Requirement compared to Achieved Performance is shown as two profile lines on a single result sheet for the criteria for each PG. This approach highlights the differences between market needs and supply chain achievement.





**Figure 3.** Cognitive steps and Worksheets in the SOLP process. Developed from Platts and Gregory (1990)

Worksheet 2 comprises three steps. *Step 3* splits the range of products, in the supply chain, into about eight product groups. In *Step 4* a team member identifies various market and contribution indicators for each product group so that the PG can be ranked in importance. In addition, a senior director or manager from the focal company explains the company's present business objectives.

Worksheet 3 (*Steps 5 and 7*) is an individual assessment of the Order-Winners and Order-Qualifiers required to attain business objectives for each product group. This step identifies the most important market requirements in operations and logistics terms both for the whole channel and for each link within it. The worksheet is completed individually by team members, summarised and debated to obtain consensus across the team. In *Step 6* a major customer is interviewed in a team meeting to find out what his or her company requires from the supply chain in terms of product and its delivery. In *Step 7*, distinctive competencies, which the individual firms or the entire channel wishes to achieve during the period of the plan to gain business, are determined.

Worksheet 4 (*Step 8*) is the estimation of current operations performance on the Order Winners for each product group. The team normally moves from individual assessment to two sub-groups for this and the remaining steps. Each sub-group focuses on one PG at a time to encourage input by individuals whilst making productive use of time. Worksheet 5 (*Step 9*) requires team members to describe current operations and logistics practices in ten policy areas and to determine whether these practices support the Order Winners for that PG.

Worksheet 6 (*Step 10*) requires members to derive the strategies that are required for each PG for both the whole logistics channel and single company links. Working from the policy weaknesses identified, members generate possible actions and choose the action that most suits their desired direction.

Worksheet 7 comprises the last two steps. In *Step 11* members assemble the actions into a time-phased action plan of policies required for a particular PG for the whole supply chain and for its separate links (see Table 1). *Step 12* is a strategy description, which explains the situation addressed and the assumptions made.

**Table 1 WORKSHEET 7**

Initials: HG & group

**ACTION PLAN – BRADLEY**

Product Group: Sausage

Policy Area	Year 1- 1998				Year 2- 1999		Year 3
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Jan-Jun	Jul-Dec	
Facilities- Meatworks		Gauge collagen	New linker	Decide capital options	Buy new equipment		
Capacity		Explain low utilisation					
Vertical Integration							
Processes & Technology			Show brands in store				
Human Resources			Train operators		Train operators		
Quality							
Control Policies			Convert sausage to new schedule	Explore national distribution			
Suppliers		Investigate trim supplies					
Distribution					Supply to 1 retailer		
New product introduction			Explore possibilities of gourmet range & 'healthy sausage' plus Halal & Kosher		Product introduction		

**Results obtained**

SOLP has been carried out successfully with two abattoirs and two smallgoods processors on six occasions in Australia leading to outcomes such as rejuvenated products, better communications and more strategically directed capital expenditure. Table 2 compares a number of important parameters across four of these processes, quoting the words of senior managers interviewed six months after the process was completed.

**Table 2** Results achieved in four SOLP applications

	Flock	Wilson	Bradley	
			Process 1	Process 2
Implementation of Company action plans	Yes, contributed to major capital expenditure	Partial	Yes, achieved 8-fold increase in turnover	Yes, considerable
Logistics actions included in action plans	Yes, all p. groups	Yes, all p. groups	Yes, 3 of 4 pg's	Yes, all p. groups
Importance of external facilitation	Essential	Very necessary	Very important	Extremely
Faults of external facilitation	No faults	Simplify process	Improve process	No faults
Group consensus	Attained	Yes, achieved	Yes, 'wall' pulled down	
Tailoring	Yes	Yes, not enough	Yes, extra criteria	Yes
Embedding	No	No	Yes	Yes

**Value Chain Analysis in the UK**

**Method**

In the second research method, researchers using *Value Chain Analysis (VCA)* in the UK take a different approach to improving the efficiency of food supply chains. With the help of a major government grant, they call a series of meetings with representatives of the whole meat value chain. Major investigative work is undertaken by the researchers and chain members. Together they visit each partner in the supply chain and construct a map, or representation on paper, of each activity carried out, inventory held, and information flow used by that partner. Activities and inventories are classified as value adding, non-value adding or necessary non-value adding (Jones & Womack 2002). This is done in sequence for a chosen meat product, or category. During this mapping, researchers and representatives observe exactly what happens, video the process and measure the times, yields, inventory quantities, labour input and delays.

Researchers identify wasted effort or loss of output and bring this to the attention of supply chain members. If all goes well, members proceed to eradicate waste, within their own operation and by negotiation, to smooth the passage of information and products between adjacent operations. To date, this work has been carried out in beef, sheep and pork supply chains.

**Results**

Whilst it is too early to provide results for Value Chain Analysis of red meat products, which commenced in August 2002, we provide an example of the type of work and its initial results. The company names in this example have been disguised to provide confidentiality. Further results can be found in Simons *et al.* (2003).

The value chain comprises lamb producers such as Sark Farm, a meat processor (Ramsden), and a major UK supermarket (Shopmart). This chain, which delivers fresh lamb cuts to Shopmart, represents a significant share of that supermarket's lamb since it sources lamb from only two processors. Most of the output from Ramsden's 500-employee plant is supplied to Shopmart. Ramsden sources its lamb from approved producers, some of whom are part of a producer group. The third element of the analysis, Sark Farm, is operated by the coordinator of this producer group.

The initial plan was to conduct whole chain workshops involving everyone, and then drill down into each organisation in detail. In introductory meetings with the retailer, supplier and producer it became clear that the retailer and supplier had different visions of where the problems in the chain were and the type of solutions that were possible.

The internal company mapping received complete cooperation from the producer and processor, but only limited commitment from the retailer. The retailer was implementing major information systems and supply chain improvements, which made value chain analysis difficult due to people's time commitments and the continuously changing process: -

At the moment it would be difficult to draw a flowchart of the system because it is somewhere in between our existing supply chain and future state vision. *Senior manager at Shopmart.*

Although improvements were sought both within the participating companies and between them, no internal improvements were identified or implemented at the producer or retailer. One problem was that the Industry Forum model used in this VCA focuses mainly on inputs such as quality levels and throughput time. By controlling these inputs, financial results are considered highly likely to improve at a later date. Across all participants, there was a tendency towards results, and scepticism towards determinant based analysis.

## Compare SOLP and VCA

The aim of the paper is to combine concepts with practice in this important, growing area of the *processes* that enable red meat businesses to develop strategies for entire supply chains. We briefly describe examples of the application of both SOLP and Value Chain Analysis and compare their advantages and disadvantages.

**Table 3 Comparison between SOLP and VCA methods**

COMPARISON		
Parameter	<i>SOLP</i>	<i>VCA</i>
Types of Meat Chains	Beef & lamb, pork smallgoods	Beef, pork, lamb
Number of echelons included	2/3	4
Method of access	Via government organisation	Via focal company
<b>Research Method</b>		
1. Formation	Using focal company, form team of managers	Call meeting of relevant managers from all partners
2. Investigation	Hold 7 two-hour workshops facilitated by researcher	Researchers & managers map product & info flow at each facility
3. Results	Team forms action plans for 2-4 product groups	Researchers suggest initial improvements/ savings
4. Implementation	Team implements plans by itself	Managers achieve savings in point 3.
5. Embedding	Achieved in one out of 3 applications	Not yet attempted
<b>Measure of Success</b>		
A. Forming Plans	Achieved in all applications	Achieved in 2 out of 3 applications
B. Implementing	One full achievement and one partial	Good signs in 2 cases.

## Discussion and recommendations

Results suggest that the VCA method ensures initial participation by all members of the meat supply chains. SOLP, starting with a focal company, has only fully involved two chain echelons in meat industry studies.

Methods of investigation are quite different. SOLP uses a facilitated workshop without overt analysis whereas VCA uses detailed mapping of flows of products and information. VCA provides the possibility of benchmarking individual firm performance and the performance of multiple firms within a chain (Hanman 1997). In terms of implementation it is likely that SOLP has a greater chance of successful implementation because it requires less public disclosure of operating strategies and practices. SOLP is likely to be more easily adopted in other food value chains, such as fresh produce supply chains, that are less readily amenable to mapping than meat supply chains. SOLP provides a process to enable fresh produce suppliers, and other supply chains, to build effective partnerships with food retailers by addressing the five key areas of strategic orientation, business culture, exploiting market information, controlling customer servicing costs and innovation, identified by Fearne and Hughes (2000).

The SOLP process has supported the formation of action plans for several product groups in all the meat supply chain cases undertaken. It is too early to report such results for VCA. However, it is clear that SOLP's plans contain actions *suggested by participant managers* whereas VCA, in its first phase, requires *researchers to suggest areas* for improvement. We are concerned that managers determine their own actions rather than having them suggested by external researchers. The VCA process intends to move to manager's actions in a second phase (Simons and Francis, personal communication, 2003).

It is important to note that animal farming and meat processing are more strongly regulated in the UK than in Australia. This is considered likely to affect the ability of supply chain members to plan together. Whilst the studies reported are limited to meat processing, we believe that the processes are quite robust and can be applied to a whole range of food and fibre processing situations.

Further work is required in both countries to improve the methods, to build up a sufficient body of cases to suggest the best way to proceed when members of meat supply chains want to improve their competitiveness and satisfy customers better and more profitably.

## Acknowledgement

We gratefully acknowledge help from Dr Mark Francis and David Simons of the Food Processing Innovation Unit of the Lean Enterprise Research Centre at Cardiff Business School, UK. They involved the author in their supply chain research in early 2003.

## References

- Bowersox, D.J. Closs, D.J. & Cooper, M.B. 2002, *Supply Chain Logistics Management*, McGraw-Hill, New York.
- Christopher, M. 1998, *Logistics and Supply Chain Management*, 2<sup>nd</sup> ed., Prentice Hall, London.
- Fabbe-Costes, N. & Colin, J. 1994, 'Formulating logistics strategy', in *Logistics and Distribution Planning*, ed J. Cooper, Kogan Page, London, pp. 36-50.
- Fitzgerald, L. Johnson, R. Brignall, T.J. Silvestro, R. & Voss, C. 1991, *Performance measurement in service businesses*, The Chartered Institute of Management Accountants, London.
- Fearne, A. & Hughes, D. 2000, "Success factors in the fresh produce supply chain", *British Food Journal*, vol. 102, no. 10, pp. 760-772.
- Hill, T. 2000, *Manufacturing Strategy*, Palgrave Basingstoke, UK..
- Hanman, S. 1997, 'Benchmarking your firm's performance with best practice', *International Journal of Logistics Management*, vol. 8, no. 2, pp. 1-17.
- Hines, P. & Rich, N. 2000, "Mapping physical flows" in *Value Stream Management*, eds. P. Hines, R. Lamming, D. Jones, P. Cousins & N. Rich, Pearson Education, London, pp.33-52.
- Jones, D. & Womack, J. 2002, *Seeing the Whole: Mapping the extended value stream*, Lean Enterprise Institute, Mass. USA.

- Jouffrey, F. & Tarondeau, J-C. 1992, "A Methodological framework for the formulation of an industrial strategy" in *Manufacturing Strategy: Process and Content*, ed. C.A.Voss, Chapman and Hall, London, pp.167-186.
- Lambert, D.M. Emmelhainz, M.A. & Gardner, J.T. 1999, 'Building successful logistics partnerships', *Journal of Business Logistics*, vol. 20, no.1, pp. 165-181.
- Mills, J. & Gardner, G. 1995, "What's in a Strategy? Toward a common language for the Strategic Alignment of Technical Functions", in *Technological Innovation and Global Challenges*, ed D. Bennett & F. Steward, European Conference on Management of Technology, Birmingham, pp. 37-44.
- Platts, K.W. 1994, "Characteristics of Methodologies for Manufacturing Strategy formulation", *Computer Integrated Manufacturing Systems*, vol. 7, no.2, pp. 93-99.
- Platts, K. & M. Gregory, M. 1992, "Manufacturing Audit Approach in the Process of Strategy Formulation", *IJ of Operations and Production Management*, vol. 10, no. 9, pp. 6-26.
- Rother, M. & Shook, J. 1998, *Learning to see: value stream mapping to create value and eliminate muda*, The Lean Enterprise Institute, Brookline, Massachusetts, USA.
- Sadler, I. 1999, "Strategic Operations and logistics planning of Australian meatworks", PhD thesis, Monash University, Melbourne.
- Sadler, I. & P. Hines, 2002, 'Operations planning process for manufacturers with a supply chain focus: Concepts and a meat processing application', *Supply Chain Management An International Journal*, vol. 7, no.4. pp. 225-241.
- Simons, D. Francis, M. Bourlakis, M. & Fearne, A. 2003, "Identifying the determinants of value in the UK red meat industry", *Journal on Chain and Network Science*, vol. 3, no. 2, pp. 109-121.
- Stevens, G.C. 2002, "Integrating the Supply Chain", *I.J. of Physical Distribution and Materials Management*, vol. 19, no. 8, pp. 3-8.
- Womack, J. & Jones D.T. "From lean production to the lean enterprise", *Harvard Business Review*, March-April, 1994.
- Womack, J. & Jones, D.T. 1996, *Lean thinking: banish waste and create wealth in your corporation*, Simon and Schuster, New York.