STRATEGIC OPERATIONS AND LOGISTICS PLANNING OF AUSTRALIAN MEATWORKS

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A thesis submitted to Monash University in fulfilment of the requirements for the degree of Doctor of Philosophy

Faculty of Business and Economics

November 1999

SUMMARY

Operations and logistics functions can play a central role in enabling companies to develop a competitive advantage. This necessitates the formulation and implementation of effective functional strategies. Over the last two decades, research has clearly revealed the benefits to organisations of implementing operations and logistics strategies but few organisations have prepared operations plans based on strategic considerations.

The *content* of an operations strategy in terms of the decision areas and competitive priorities is well defined in the literature. However, the *process* of formulating an operations strategy is less well developed. In formulating an operations strategy, three major factors are considered to be important. These are:

(i) the logical steps to be followed to complete the formulation of the operations strategy;

(ii) the need to tailor the operations strategy both in terms of its content and process to fit the organisational needs; and

(iii) the importance of providing external facilitation in completing the strategy formulation process.

These three factors can impact the extent to which a formulation of operations and logistics strategies is effective.

This thesis uses the Manufacturing Audit Approach (MAA) as the basis for developing and implementing a process of Strategic Operations and Logistics Planning (SOLP) which successfully enables Action Plans to be formulated and implemented. The lack of operations and logistics strategies to drive competitive advantage is particularly evident in the Australian meat industry where the present research was carried out, involving three meatworks. The research project uses action research, in which the researcher acts as an external facilitator, to support strategy formulation. This situation enables the researcher to observe the managers closely during the strategic planning process.

The research was carried out in five phases. In the first phase, the MAA was applied in two different organisations. During seven meetings over three months, the process

was tailored to managers' needs in each organisation. Phase 2 modified the MAA into the SOLP process by adding time-phased Action Plans and by adapting to the meat industry. Phase 3 applied the Strategic Operations and Logistics Planning Process in two meatworks, providing external facilitation and tailoring the process to the firm's needs. These applications successfully produced Action Plans which were implemented. The competitive criteria used were noted and the strategy stage achieved by managers was measured.

Phase 4 extended the SOLP process to formulate operations and logistics strategy of supply chain partners. In Phase 5, the extended process was applied twice in a third meatworks. The process was very effective in enabling the team to produce and implement Action Plans. The SOLP process was embedded into the managers' regular tasks. Some progress was made in the formulation of operations plans by supply chain partners.

Measurement of the participating managers' understanding of the process in these meatworks demonstrated that the novel provision of external facilitation, in an action research context, provides a supportive environment for strategic operations planning. The SOLP process was successfully implemented in three meatworks which lacked a planning process. Many of the resulting Action Plans for individual product families were implemented and contributed to increased turnover.

Further research is recommended with teams of managers in a number of industries using the action research methodology. More work is required with teams representing all the partners in a supply chain to implement a process for formulating operations plans for complete supply chains.

STATEMENT OF DECLARATION

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university and that, to the best of my knowledge and belief, the thesis contains no material previously published or written by another person, except when due reference is made in the text of the thesis.

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Ian Sadler

ACKNOWLEDGMENTS

I give sincere thanks to my supervisor, Professor Amrik Sohal, for his superb support throughout all my doctoral studies. He provided motivation, scholarly advice and direction which was pivotal to the achievement of this thesis. Amrik's direct, focussed approach and ready availability set him apart from all other supervisors I have come across. I am extremely grateful.

I also thank Dr Dianne Waddell for her supervision for twelve months whilst my main supervisor was overseas. She provided excellent advice that I needed at that time. I have had continual support and encouragement from my Head of Department, Associate Professor Peter Rumpf and I thank him. My colleagues at Victoria University of Technology and my fellow doctoral students at the Caulfield Campus of Monash University have supported me unstintingly.

Special thanks go to Jo Sadler, my wife, for her support over nearly five years. I am particularly grateful for this.

I thank all the people who have given me secretarial, illustrative or editorial help in bringing this thesis to its current state.

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CHAPTER ONE

INTRODUCING OPERATIONS STRATEGY INTO THE AUSTRALIAN MEAT PROCESSING INDUSTRY

"New conditions call for new rules and a new policy."(Lysander c.395 B.C.).

This Introduction outlines a problem that exists in the ability of operations and logistics functions of Australian meat processing companies to support their company business strategies to attain improved competitive advantages. Next, it indicates how previous research can be developed into an improved strategic operations planning process, extended to cover the integrated supply chain and tested in meatworks. Examination of this industry shows that it lacks strategic decision-making skills in operations and logistics areas. A Strategic Operations and Logistics Planning (SOLP) process is considered as a solution to the functional strategy problem. A five- stage research project using an Action Research methodology is carried out, providing a strategic planning process which is better able to support operations functions of companies and hence reduce the problem identified.

1.1 Reason for the Research

This research has been undertaken to improve the competitive stance of companies through strategic planning of the operations and logistics functions. The aim is to support those functions by a strategic planning process, the results of which will lead to enhanced decision-making which, in turn, should improve business performance. This process, which is called Strategic Operations and Logistics Planning (SOLP), is developed from the Manufacturing Audit Approach (Platts and Gregory 1990, p. 6-26). The SOLP process provides more support to company managers and widens the scope to include supply chain

members. This extended process has been introduced to the Australian meat processing industry.

Much of the manufacturing industry in Australia is not very competitive, as attested by a number of recent studies. Some of those studies are reviewed here and the specific meat industry situation is considered in Section 1.4. Pappas, Carter, Evans, Koop and Telsis (1990) state that most Australian manufacturing companies are not internationally competitive, although some companies have changed their operations strategies to flatten organisational structures and increase production flexibility through continuous improvement. They say that a halt to the consequent rapid demise of many manufacturing companies in Australia will require a clear understanding of the markets to be satisfied and the operations processes, technologies, people and infrastructure required.

The report of the Industry Task Force on Leadership and Management Skills, 'Enterprising Nation' (Karpin, 1995, p. x - xii), states that a new paradigm of management is needed in Australia because managers have not kept up with their opposite numbers in competitive enterprises in other parts of the world:

> *Australian enterprises are not moving fast enough to address the new paradigm of management. Many of their counterparts overseas, especially the leaders in various fields of industry and education, are changing more rapidly and more extensively, and will be better prepared for the next century.*

The Task Force states that Australian managers need to increase their skills in entrepreneurship, management of diversity, benchmarking and competencies.

The report 'Leading the Way' (Australian Manufacturing Council 1994) studied best manufacturing practices in Australia and New Zealand. It examined manufacturing strategy as a module in its Best Manufacturing Practices Model and identified a systematic and participative planning process as a key element in this strategy. The Australian Manufacturing Council surveyed 960 Australian manufacturing sites and reported the responses as 'leaders', the average of the top quartile, and 'laggers', the average of the bottom quartile. The survey revealed the following information:

- a comprehensive and structured planning process was possessed by 75% of Australian leaders and 36% of laggers;
- customer requirements, supplier capabilities and the needs of other stakeholders were incorporated into the planning process by 92% of leaders and 50% of laggers; and
- a written statement of strategy covering all manufacturing operations existed in 52% of leaders and 27% of laggers.

Hence this report indicates that progress has been made, but more is required to increase the competitiveness of Australian manufacturing industry.

The above studies mean that Australian manufacturing industry should use a variety of strategies to move towards best practice in order to hold its market share and profitability against strong competition from '*world class*' (see Glossary) companies from all parts of the globe. The in-house planning of operations and logistics strategies for each product family will assist the development of those strategies. The importance of operations as a necessary concomitant of manufacturing effectiveness is now introduced, whilst the role of logistics and supply chain strategy is explored in Section 1.5.

It is important to study operations because manufacturing is essential to the health of the Australian economy. Nations without a broad manufacturing base are unable to decide their own destiny and provide sufficient jobs for their populations. Manufacturing businesses require managers, engineers and scientists and this demand provides careers and personal development. The existence of manufacturing in Australia allows its population to design and manufacture their own variants of cars, clothing, computers and household goods. If the manufacturing base narrows, Australia becomes more reliant on overseas views of its requirements. In addition, having its own production facilities gives Australia access to design and technological improvements in many world forums.

Within a manufacturing enterprise, the operations function makes a major contribution since it is responsible for converting raw materials into products and services required by customers. All goods and services which people use are only available as a result of the efforts of the operations managers who organised their production. Other functions, such

as marketing and finance, obtain customers and credit, respectively. The efforts of these other functions would fail if operators did not make the products. '*Since this is the very reason for any organisation's existence, operations management should be at the heart of its affairs. Operations managers hold the key to either satisfying or disappointing the customers upon whom the whole organisation depends*' (Slack, Chambers, Harland, Harrison and Johnston 1998, p. ix). Operations managers make a central contribution in ensuring that the company is competitive and capable.

This research aims to improve the decision-making of certain Australian companies through *operationalising* (see glossary) a process for strategic planning of the operations and logistics functions. Action Research is used to address gaps in knowledge of the process by which operations and logistics strategy can most effectively be carried out. The use of Action Research over several months provides superior *support* (see glossary) to the directors and managers carrying out planning of these functions in meat processing companies. It enables the researcher to directly observe the use of the process so that the process of formulation can be built, developed and applied in a field situation.

A glossary is provided at the end of the thesis to give precise definitions of technical terms in the discipline areas, or to define a novel meaning. Such terms are placed in *italics* when they first occur in the thesis.

1.2 Lack of Operations Strategy impedes the Effectiveness of Business

A business strategy is required to provide an overall direction for an enterprise so that its management can develop and operate the business successfully to attain competitive advantage. Within that business strategy, functional strategies are required to guide individual departments. The relative failure of corporate planning in the period 1960 to 1980 (Mintzberg 1994) has led to an understanding that functional planning is required. 'Top-down' determination of overall business aims should be followed by 'bottom-up' resolution of strategic actions by individual functions.

Before examining the operations function, it is useful to analyse the enterprise in terms of the sequential steps required to supply products to customers. Competitive advantage can

best be understood by separating a firm into the discrete activities which it performs, such as marketing, producing and delivering, which Porter (1985, p. 33) calls a value chain:

> *The value chain dis-aggregates a firm into its strategically relevant activities in order to understand the behavior of costs and the existing and potential sources of differentiation.*

Figure 1.1 shows how Porter (1985, p. 37) views primary and support activities as mutually combining to create value through enabling the firm to supply its customers with products in a highly competitive manner.

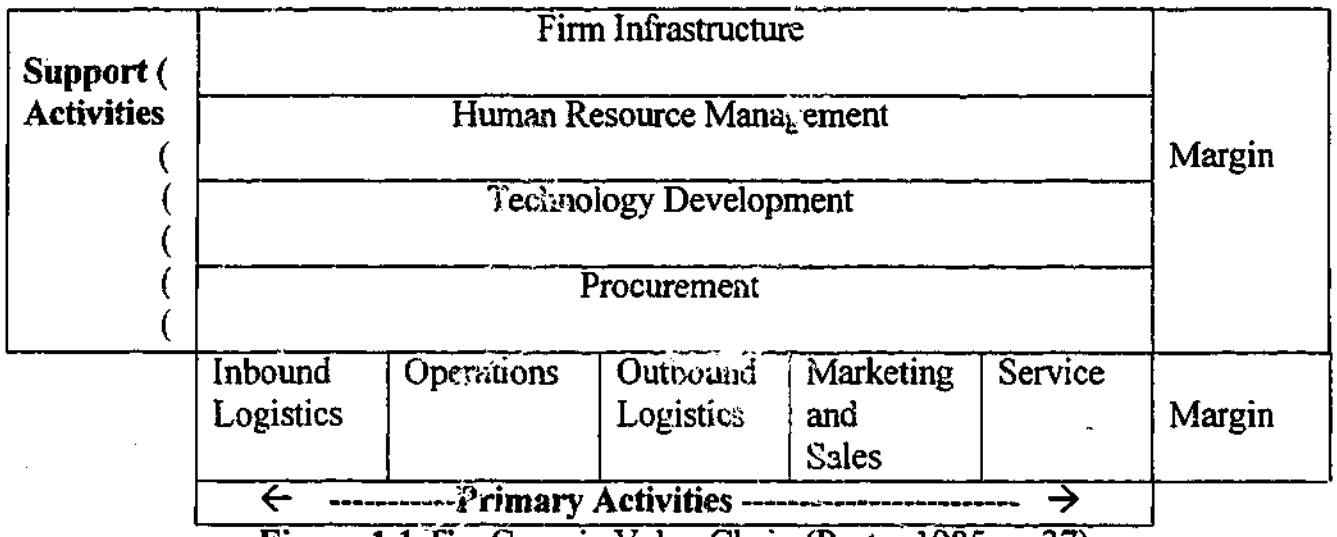


Figure 1.1 The Generic Value Chain (Porter 1985, p. 37)

In many cases, companies do not span the whole logistics channel from raw materials to delivery of finished products. Then each company has its value chain and the assembly of individual chains has been called a value system (Porter 1985, p. 35). The value system typically comprises supplier firms, manufacturers, product distributors and retailers. The term *integrated supply chain* will be used synonymously with this value system. The operation's perspective on integrated supply chains is introduced in section 1.5.

In contrast to the market-based view of the firm just described, Penrose (1959) takes the view that a firm's resources can be built into a 'basic position' from which external threats can be survived and opportunities realised. Recent work (Mills, Bourne, Platts and Gregory 1998, p. 156-62) examines the merits of a resource-based view of the firm in

proving a valuable perspective for formulation of operations strategy. This resource-based view of the firm is accepted but the market-based view is emphasised in this work because of the needs of the managers encountered.

Within these overall views of the firm, individual functions require objectives. Manufacturing operations is one of the functions which requires its own strategies to support the business strategy. Operations was particularly disadvantaged by the corporate planning and marketing era. Many companies assumed that the operations function should merely respond to market plans and corporate cost and capital expenditure guidelines (Hill 1989, p. 20-24).

Operations Management is defined (Krajewski and Ritzman 1992, p. 3):

> *Operations management refers to the systematic direction and control of the processes that transform inputs into finished goods and services.*

An additional important concept in operations is the arrangement of resources (equipment, people and financial) devoted to the production of goods and services in an organisation (Slack et al. 1998, p. 6). The operations function has a primary responsibility for fulfilling customer needs for products. This essential nature of operations leads to the conclusion that it should play a comprehensive and pro-active part in business strategy determination.

An operations strategy can enable a group of operations and logistics managers to work as a team, to obtain corporate approval of the resources they need to change and to define the strategic actions required to achieve distinctive competencies to win business in markets. Improved operations effectiveness flows from managers having a coherent plan to drive operations in the required direction and hence carrying out better actions, day by day. Involvement of other functional managers in the process of operations strategy development is important to ensure that their impacts on operations, as components of the same business system, are considered. Operations strategy requires well-thought-out relationships with other parts of the business.

1.3 Previous Studies of Operations Strategy and Suitable Processes

Findings of previous studies underpin the present research. Skinner first realised that operations was typically left out of the corporate strategy debate and recognised that it could become a major competitive weapon by formulating the specific policy settings required to design and manage manufacturing operations (Skinner 1978, p. 7). Hayes and Wheelwright (1984, p. 31) further developed this concept into a list of content variables for operations strategies. They also recognised that the life-cycle stage and volume/order size characteristics of products are very important because such characteristics change the operations task. Hayes and Wheelwright (1984, p. 396) defined four stages of competitiveness that the operations function of companies could achieve, ranging from doing harm to the marketing effort, typified as 'Internally Neutral', through to actively supporting the factors which customers most require in their goods, known as 'Externally Supportive'.

The steps necessary to formulate effective operations strategies were developed by Hill (1989, p. 26-31). He emphasised the need for operations to be responsive to the business's marketing strategy and devised the concept of order winning criteria which enable the operations function to tailor its offering to customer requirements. Platts and Gregory operationalised the process of formulating operations strategy by providing a set of worksheets and a workshop format which enabled operations strategies to be derived. They called this process the Manufacturing Audit Approach (Platts and Gregory 1990, p.11-17). Later Platts (1994) suggested that four characteristics (procedure, participation, project management and point of entry) must be present for successful implementation. Menda and Dilts (1997) added extra process steps to fully encapsulate multi-functional perspectives in the evaluation of operations process and infrastructure decisions.

Added together, this research isolated the need for operations strategy, specified its required content, generated the stages required to formulate such a strategy and developed a practical process to derive such a strategy. It is argued that previous operations strategy research has failed to *operationalise* the process, which explains why

Skinner stated that only a small proportion of manufacturing firms were putting the available concepts into practice (Skinner 1992).

The only published evidence of strategic operations planning in Australia is some cases (Samson 1990) and the planning of advanced manufacturing technology (Sohal, Samson and Weill 1991).

This research builds on previous work on operations strategy to improve the ability of managers to determine the best direction and specific actions of the operations function so that the needs of customers can be met. Unlike most previous research, this study argues that operations strategy should be developed concurrently with logistics policies, because logistics deals with physical movements and inventories of the same goods made by operations and their raw material inputs. Many of the policies required by operations will affect the logistics outcomes and so it is logical to develop strategies for both functions at the same time.

1.4 Use of Australian Meat Industry for Empirical Study

The meat processing industry is an essential part of the Australian economy comprising the dressing and processing of beef, lamb and pork meats from live animals into fresh meat portions, and manufactured products. The two main sections of the industry comprise abattoirs (including slaughter and boning rooms), which convert live animals into fresh meats, and smallgoods factories, which make manufactured meats and preserved meat products. The whole industry, processing cattle, sheep and pigs into various meats, turned over $A4.1 billion in 1996 (AUS-MEAT 1997, p. 13). Domestic sales by the industries are well-developed for all three species and major export sales are made in beef and lamb meats.

The Australian red meat industry (i.e. beef and lamb) is subject to major fluctuations caused by farming practices, the international supply/demand situation and industry restructuring impelled by the aggressive practices of multinational firms which own over half the industry (AUS-MEAT 1997, p. 14). The extent of private Australian ownership decreased from 40% in 1995 to 33% in 1996 (AUS-MEAT 1997, p.14). Competition in

export markets is rising due to the United States of America selling a large quantity of its beef into export markets and the return of Argentine beef. Export-licensed abattoirs are selling more meat into domestic markets because strong competition has restricted their export sales. Beef exports were valued at $2.8 billion in the 1998/99 financial year (Australian Bureau of Statistics 1999) and account for more than 60% of local beef production (Horchner, Preston, Mansour-Nahra and Ogle 1998, p. 54-62). The number of Australian abattoirs is reducing as smaller, mainly domestic-licensed, ones are displaced by export-licensed abattoirs. The majority of red meat abattoirs are located in rural cities and towns where they are critical to levels of employment and general business. There was a total of 215 beef and sheep abattoirs in January, 1997 but this has since reduced considerably.

The Australian pork meat industry (growing, dressing and manufacturing) has been strongly impacted by the effect of widened import access in 1998 and the increase in pork exports from Australia to Singapore. The latter was caused by the Singapore markets losing their supplies of Malaysian live pigs, which had to be slaughtered, and the preference for Australian pork over European meat, which was tainted with the Dioxin concerns (M. Colless, CAPE 1999). The smallgoods industry purchases boned pig meat and transforms it by a number of massaging, mixing and curing processes into a wide variety of cured, spiced and fresh products.

The above review shows that Australian meatworks are important and in some difficulty. A further reason to examine Australian meatworks is the lack of attention they have received from management and operations researchers. There has been a large amount of international research into the metal-working industries and automobile manufacture and relatively little into other industries and hardly any into the meat processing industry, or *meatworks* (refer Glossary). The majority of research papers focus on the automobile industry, metal machining and pressing or the electronics-based industries. Published work in the food industry is uncommon and only one case describing meat processing (Slack et al., 1993, p.47-56*)* is known. Hence it is opportune for this research to investigate the operations of meatworks and their place in supply chains. It is necessary to

start with basic research to establish what proportion of the operations and logistics strategy concepts derived for other industries are applicable.

Given that Australian meatworks are significant to the economy, it is important to consider whether their management and operating practices are good enough. The Karpin Report (Enterprising Nation 1995) identified leadership skills as one of the eight best practice areas in which Australian managers need to improve their skills:

> *"Without appropriately skilled managers who can adapt themselves and their organisations to change, it will be difficult for Australian enterprises to maintain their competitiveness. Future waves of technological innovation and new competitive challenges will require our enterprises to continuously recreate themselves. To do so requires multi-skilled managers with great capacity to learn both their own roles and the bases of their enterprise's competitive advantages."*
> (Enterprising Nation 1995, p. 95)

The Australian meat processing industry is emerging from a long period in which management competencies, including personal development, people management and organisational learning, were well below best practice (Andrewartha et al. 1996, p.76). Andrewartha et al. found operations management in the meat processing industry to be sound in daily and tactical decision-making but lacking long-term vision and planning. Inadequately developed partnerships, internally and externally along the supply chain, have also prevented improvements in productivity and flexibility. Meeting customers' specific needs should be the major driving force in the Australian meat industry.

One meat industry response has been to increase the quality of products through heavy investment in quality training, laboratories and equipment. Quality assurance schemes have been developed to cover every link in the chain from farms through processing to retailing. Processors use critical control point principles for process control (AUS-MEAT 1998, p. 21). However, the productivity of this industry is considerably lower than its North American and New Zealand competitors. Figure 1.2 shows that processing costs, excluding logistics, at the best Australian abattoir were A$0.72 more per kilogram of meat than United States and A$0.41 more than New Zealand (Booz et al. 1993, p. IV-4).

No published study of the functional strategy of meatworks operations and logistics in Australia has been found. A recent Meat Industry Strategic Plan (Meat Industry Council 1996) identified 'improved management to achieve a culture of success' as one of six industry goals. Corporate plans, of those meat companies who have them, were observed to contain current snapshots and simple forward marketing aims to justify loans, rather than detailed plans to produce goods for specific markets. Previous study of operations has concentrated on product safety and quality, skill training for process workers and cost/productivity comparisons (Andrewartha et al. 1996 and Australian Meat Marketing 1994).

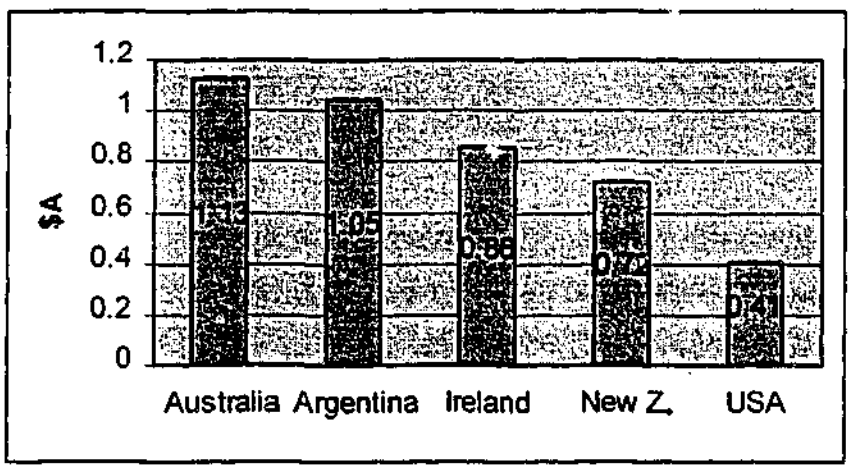


Figure 1.2 Comparison of Beef Processing Costs per kilogram of meat (Booz et al. 1993, p.IV-4).

The need for management training in the meat industry was noted in a report (Industry Commission 1994, p.196), which stated that abattoir managers had traditionally worked their way up through the workforce with little, if any, formal management training. This led Victoria University of Technology (Melbourne, Victoria) to set up a Diploma of Meat Management in 1992 to meet this precise need. A report to the industry's Leadership Development Group (Andrewartha, Correll and Pickett 1996) indicated that management usually had the necessary technical skills but often needed training in more generalist areas such as planning, human resources and marketing.

There is evidence to suggest that meatworks lack management competencies, training and planning skills in operations areas and will require considerable change to both structure and infra-structure areas if they are to win export business in the future (Andrewartha et al. 1996). Consultants who compared ten Australian beef meatworks with corresponding plants in four overseas countries concluded that improved industry performance would mainly come from workplace reform (Booz, Allen and Hamilton 1993, p. 2):

> *The co-operative lift in productivity will largely come from reforms to fundamental work practices, including:*
>
> - *Elimination of job demarcations,*
> - *Increased workplace flexibility,*
> - *Increased worker / management cooperation,*
> - *Integration of facilities, and*
> - *Occupational health and safety.*

Meatworks achieve good operations management practices, although generally below best practice standards (Andrewartha et al. 1996, p. 26). However Andrewartha found meatworks managers were unlikely to use strategic planning in operations. Systems thinking, an essential competency to manage the future, was 'rarely grasped and not comprehensively practised' (Andrewartha et al. 1996, p. 34). Since logistics management requires systems thinking which goes beyond the individual organisation to a whole chain of companies, it is inferred that logistics strategy is also rare in this industry.

From a research perspective, meat processing firms provide an unusual situation because the development of their management is believed to be limited. This project will therefore examine a process which is expected to enable meatworks to become more competitive. Such improvement would come partly from deriving and implementing strategic operations plans, and partly from development of supply chain partnerships. The method used by the project is longitudinal Action Research, requiring the researcher to be involved with the companies for at least three months. The external aim of this research is to improve the supports provided to the meat companies so that the likelihood of successful strategic operations and logistics planning is increased.

Logistics has been commented upon in several contexts, above. It is now necessary to define supply chain management and explore the interaction between logistics and operations planning in processes of Strategic Operations and Logistics Planning for meatworks.

1.5 Operations and Logistics Strategy Formulation

Logistics and supply chain strategy is particularly important in the meat industry because its product is so perishable. A typical-meat processor, such as a beef abattoir, is heavily dependent on the flow of livestock from farms in terms of quality, size and time of receipt. The meatworks must respond on minimal notice to the requirements of a range of distributors from table meats for restaurants and retail meats for supermarkets on the domestic market, to a wide spectrum of export customers. A further complication for red meatworks is the need to sell a large volume of co-products, such as offal and hides, and to dispose of numerous waste products in environmentally satisfactory ways.

The logistics function of a manufacturing company is essential to the achievement of competitive advantage as indicated in the context of value chains (refer section 1.2). This function is responsible for order quantities, transport and warehousing in the supply chain from vendors through processing companies to the distributors, retailers and end consumers of their goods. Working with partners in the supply chain, logistics manages the flow of materials, goods and services from the source of raw materials through conversion until consumption.

The wider perspective of integrated supply chain management is considered important to this project because of the belief that efficiency can be improved by sharing information and by joint planning of operations by each partner in the chain, since they are jointly responsible for producing and delivering products to satisfy customers' needs (Mabert and Venkataramanan, 1998, p.537). This perspective shifts the channel arrangements from a loosely-linked group of independent businesses to a coordinated effort focussed on efficiency improvement and increased competitiveness. The ability of a logistics strategy to improve the competitiveness of a group of businesses is confirmed by

Bowersox and Closs (1996, p.101). Research into partnering in supply chains found that joint planning is a key element of any successful partnership (Lambert, Emmelhainz and Gardner 1999, p. 174).

Given the above definitions, the current research investigates whether the integration of business functions, which is fundamental to logistics, requires an operations strategy to be developed in concert with a logistics strategy. Such a combined functional strategy is called Strategic Operations and Logistics Planning (SOLP). It is argued that logistics strategy is so similar to operations strategy that it will benefit from an extension of the same process, the Manufacturing Audit Approach (Platts and Gregory 1990), because of the close business connections between logistics and operations. Key logistics criteria are therefore tested alongside operations criteria in applying an extended SOLP process to the operations and logistics functions of Australian meatworks. Successful application of the SOLP process implies that it is conceptually correct, feasible and practical, in the sense that the process efficiently engenders effective implementation.

As an outcome of the present research, the formulation of operations and logistics strategies involves:

- finding out what operations' actions win orders for each product group, in given markets;
- having a coherent plan to drive operations and the supply chain in the direction required by the business objectives;
- understanding the current status of operations policies;
- tailoring general methods to a specific industry;
- achieving better actions and decisions by operations and logistic managers; and
- planning which includes supply chain partners.

1.6 Research Hypotheses, Significance and Scope

A good process for strategic operations planning (Platts and Gregory 1990, p. 6-26), which was mentioned in section 1.3 and is described in section 2.5.4, is the Manufacturing Audit Approach (MAA). The present research extends and tailors the

MAA so that it enables and supports the formulation of operations and logistics functional strategies in three meat processing companies. The areas covered by the operations and logistics functions of Australian meatworks, and their supply chain partners, have been described in section 1.4.

The research investigates whether a strategic operations and logistics planning process can be developed and supported sufficiently to meet the needs of managers in the meat processing industry. A key aim is the production of time-phased Action Plans and their implementation by the planning team. A further aim is to find out whether the SOLP process *improves* strategic actions of the meatworks managers involved and, hence, may contribute to improved strategic decision-making. The research builds on the premise that an operations strategy should be developed in concert with a logistics strategy to increase their joint effectiveness. It also investigates whether strategic operations and logistics planning can be extended across all the partners in an integrated supply chain.

The use of Action Research as the research methodology is very important to obtain access to teams of managers and hence to the success of the project. The researcher acts as facilitator to the *Game Plan* (this is a term used for the SOLP process, see Glossary) team so that he or she coaches them in the process of SOLP whilst observing the factors required for successful plan formulation. Within this methodology, other objectives are to examine the role which a facilitator plays and the characteristics needed by a facilitator. The steps involved in the SOLP process are considered in detail, including the use of sub-teams to enhance democratic input, and the degree of customer involvement in the process; to ensure that the planning team is supported very effectively.

Hence the research hypotheses are:

- The SOLP process can be applied effectively to the meat processing industry, which has some significant differences from other manufacturing industries;
- The SOLP process has been operationalised for manufacturing companies, because barriers to success have been removed;
- An extended MAA process (SOLP) effectively links operations and logistics into a complete functional strategy;

- The SOLP process contributes to improved strategic decision-making by improving strategic actions of the managers involved; and
- Action Research provides an approach which engenders an effective SOLP process.

The present research is relevant because it builds on the body of knowledge about the methods of strategic management of operations and logistics and the process of formulating strategic plans for those functions. Its particular significance lies in:

- providing a process which is effective in, and tailored to, the meat industry;
- providing an external facilitator to help managers formulate strategic operations and logistics plans;
- obtaining evidence that managers carried out different actions as a result of the Strategic Operations and Logistics Planning; and
- investigating the process of concurrently planning operations and logistics in an integrated meat industry supply chain.

The research is relevant to industry because it provides an SOLP process for an industry which previously lacked both strategic operations and strategic logistics planning. It provides a tailored planning process, which enables meatworks operations managers and managers of other functions to apply their own experience to derive operations and logistics strategies and Action Plans. The process is expected to increase the competitiveness of certain companies in the Australian meat processing industry, although proof of this outcome is not sought in the present project. The research applies to the processing of beef, lamb and pork, although the SOLP process is believed to be applicable to other manufacturing industries. The process also aims to assist managers to improve their strategic decision-making ability.

1.7 Structure of Thesis and Outline of Methodology

The research develops a process of Strategic Operations and Logistics Planning (SOLP) to make it more effective, extends it to include all the links in the supply chain and tailors it for the Australian meat processing industry. The approach used is Action Research

(Foster 1972, p. 529-556 and Argyris, Putnam and Smith 1990, p. 225-265) in which the researcher engages closely with company managers over a period of time to assist them to derive strategic Action Plans for a number of product families. Each application of SOLP takes about three months to carry out. Managers' understanding of strategic operations and reactions to the process are observed during meetings and separate interviews. The extended contact with team members, and repeated use of the process, provides longitudinal observation of the enterprise and its managers.

The structure of the thesis is now explained, incorporating an outline of the research design. Chapter 1 introduces the overall rationale for the study. Manufacturing Strategy research emphasises the part which operations can play in winning orders and growing the businesses. Strategic operations planning processes exist for crafting operations strategy but they require further development. This thesis carries out some of that further development. It extends and tailors the MAA (Platts and Gregory 1990, p. 6-26) into a Strategic Operations and Logistics Planning process for Australian meatworks. Meatworks are used for empirical studies because:

- they are important to the Australian economy;
- they lack strategic operations plans; and
- they have been largely ignored by business researchers.

The process is extended to embrace supply chain partners, because the firms can become more effective by enhancing the operational performance of the whole chain. The problem is seen as moving towards strategic management of operations and logistics by increasing the ability of managers to take strategic decisions.

Chapter 2 reviews the current state of knowledge of operations and logistics strategy formulation and places it in the context of business strategy and the pressures that drive functional strategies in enterprises. The development of frameworks to guide operations strategy and the isolation of process and content issues is examined. The process steps required by an SOLP process are reviewed in depth and the Manufacturing Audit Approach (Platts and Gregory 1990, p.6-26) is seen as providing more support in formulation than other processes. One example of this support is the provision of external

facilitation to enable democratic teamwork. The paucity of strategic planning processes for logistics management is highlighted and the case for joint planning of operations and logistics in firms is considered. The review examines the need to extend such planning to encompass the entire supply chain for a particular family of products. The knowledge of operations and logistics planning in the meat processing industry, particularly in Australia, is found to be rather limited. Finally, methods of research suitable for SOLP process development are investigated.

The Research Methodology, set out in Chapter 3, uses Action Research to provide the environment for close involvement with a number of firms over several months. Case research methods are used to compare across a number of applications and structured interviews are used to obtain individual comments. The research comprises five phases. Firstly, the Manufacturing Audit Approach is tested in two Australian organisations to ensure that its applicability in Australia is understood. In Phase 2 the Strategic Operations and Logistics Planning process is designed for the meat processing industry and propositions are created to enable research hypotheses to be tested. In Phase 3, the SOLP process is applied to two meatworks and interviews are used to measure team members' understanding of strategic operations. In Phase 4, the SOLP method is extended to plan operations and logistics for all firms in the integrated supply chain. In the final Phase, the extended SOLP process is applied in a third meatworks and, again, team members are interviewed. The methods of analysing the information collected and the limitations in using these research methods are discussed.

Chapter 4, *Phase 1* of the research, documents the work carried out to understand the benefits and shortcomings of the Manufacturing Audit Approach in Australia. The full process was used in two Australian organisations. From this work, conclusions are drawn to engender effective use of the process.

In Chapter 5, *Phase 2* of the research, the MAA was modified into Strategic Operations and Logistics Planning, including changes to make it more suitable for meatworks. A longitudinal process was developed which provides output from the process in effective

Action Plans. Phase 2 also designs the collection of research information from all members of the planning team and. Key elements in this modification were:

- the derivation of concrete propositions to test the research questions. These propositions were embodied in individual structured interviews undertaken by team members at the start and end of the SOLP process;
- the SOLP process was tailored to Australian meatworks by modifying order winning criteria and redefining operations policy areas;
- additional steps were added to ensure customers were interviewed during the process and to develop time-phased Action Plans; and
- integration of logistics into operations strategy for meatworks because of their dependence on livestock or meat supply and because meat products are perishable.

The process requires a team of managers to fill in worksheets during a series of meetings facilitated by the researcher. The worksheets help managers develop strategies and actions for a number of product families.

Chapter 6, *Phase 3* of the research, reports applications of the SOLP process at two meat processing companies. In each application the company and the planning process is described. Outcomes from the process, which measure the status of operations strategy at the company, are documented. The first application was carried out at the 'Flock' meatworks where the managing director was keen to benefit from the clearer set of forward actions and improved team work which the SOLP provided. The process provided four Action Plans and a decision to proceed with capital expenditure to develop part of the business. The second application took place at the 'Wilson' meatworks, which was chosen because of its novel approach to meat marketing. Wilson had poorly-educated managers who lacked some of the vision required for strategic planning but the interest of two directors allowed SOLP to proceed to Action Plans for four product families. Short-term survival challenges prevented the Plans from being fully implemented. Team members were interviewed both before and after these two SOLP processes and two

years later to measure their understanding of strategic operations and to record their observations about the processes.

Chapter 7 describes *Phases 4 and 5* of the research in which SOLP is extended to cover the operations of supply chain partners and applied in one meatworks. A case is made, building on the literature available, for the SOLP process to be concurrently applied to all the members of an integrated supply chain. The theoretical basis and the steps required for such an extended process are set down. This leads to a number of changes to the process and worksheets. Operations managers of suppliers and distributors are involved to obtain their inputs to the plans required for competitive success. In the final stage of the research, the extended SOLP process was applied at the 'Bradley' smallgoods company. Bradley was chosen because its management were highly motivated to proceed with Strategic Operations and Logistics Planning. It has a stronger management structure and its team applied the SOLP process twice. A member of a supply chain partner was included in the planning team. These two applications resulted in Action Plans for eight product families, many of which were fully implemented. The degree of understanding of strategic operations by the team members was again measured on a number of occasions. The results of these interviews and the outcomes of the process are described.

Chapter 8 analyses the results observed at four applications of the SOLP process, described in Chapters 6 and 7. First the specific outcomes from the SOLP process are examined to summarise the information obtained about process stages and the strategies which resulted from SOLP. Next, the amount of support which team member interviews and process observations gave to each of the research propositions is considered. Thirdly, the extent that the empirical findings and other research confirm or deny the research hypotheses is evaluated.

Chapter 9 considers the contribution made by the present work to the understanding of strategic planning of the operations and logistics functions of meatworks. The benefits which meatworks and other enterprises can obtain from the research are described. The importance of the Action Research methodology in this project and its implication that companies should use facilitators to enable successful *Game Plans* are examined.

Chapter 10 uses the findings of the present research to draw conclusions about the ability of the Strategic Operations and Logistics Planning process to link operations and logistics into a complete functional strategy for Australian meat processing companies. It is clear that SOLP enables meatworks' managers to derive effective strategic directions and Actions Plans to move the company in those directions. There appears to be a minimum extent of management competencies below which strategic operations planning is not likely to be successful. Conclusions are drawn about the support which the SOLP process gives to teams of managers. A significant start has been made in widening the SOLP process to include operations of the whole supply chain. Further Action Research with willing industrial partners is required to round out this concept and more clearly specify its benefits and limitations.

1.8 Limitations of the Study

The purpose of this study is to improve the competitive stance of companies through strategic planning of operations and logistics functions, leading to enhanced execution. Whilst substantial progress is made in this direction, the study is limited by its application to a number of meat processing companies. It is argued that meatworks are very different from most other manufacturing companies because of their emphasis on operations performed by people; because of their involvement with a perishable, contaminable product; and because of their lack of development of company and manufacturing structures. These influences are not considered sufficient to invalidate the careful use of this study's findings with a broad range of manufacturing industries and, particularly, the food industry.

The Strategic Operations and Logistics Planning process seeks to enable a team of supply chain partners to plan, together, the operations of a complete supply chain. This is a new concept which has not been undertaken previously in published studies. Supply chain-wide planning is difficult because each distinct business has, at the outset, different business objectives. Consequently managers in the application companies need to have good relationships with their suppliers and customers and then endeavour to derive common objectives which provide customers' requirements from the supply chain

without disadvantaging individual supply chain members. A limited amount of progress has been made in providing a process which supports the joint formulation of operations and logistics strategies for all members of a supply chain.

A further limitation is caused by the relatively passive role of the researcher in facilitating the planning process. It is probable that a more active role would have created greater evidence of SOLP outcomes in terms of actions by team members and major decisions taken. The danger with such an active role is that such progress would have been short-term and lost when the facilitator was not there. Therefore, on balance, passive facilitation was practised so that a more permanent improvement in strategic management of operations and logistics could be engendered.

The approach of facilitation of industry cases plus structured interviews with team members has two limitations:

- the extensive time commitment with each process limits the number of applications which may be used; and
- the lack of recording team meetings and getting individual feedback of meetings limits the extent that critical comment on the method can be obtained from team members.

In spite of these limitations, the passive role of the researcher was considered the best available to test concepts in a real world situation without unduly influencing the managers' actions in that situation.

1.9 Summary

This research takes a good process of strategic operations planning, the Manufacturing Audit Approach (Platts and Gregory 1990) and tests it in Australian situations. Resultant improvements give rise to a process called Strategic Operations and Logistics Planning (SOLP) which is particularly aimed at operations and logistics planning for Australian meat processing companies. The process is extended into the logistics functions of the meatworks and their supply chain partners.

The methodology of Action Research is used to obtain valid entry into the process of formulation of operations and logistics plans, where the researcher acts as a facilitator. In this way the SOLP process is applied in three Australian meatworks. Observations of the process and interviews with members of the planning teams provide information to judge the success of the process. It appears that the SOLP process supports meatworks managers very effectively, since they produce implementable Action Plans and they find the process both useable and useful.

The next chapter presents the current knowledge of the formulation of strategic operations plans and identifies the gaps in support and operationalisation of the process which the research addresses.

CHAPTER TWO

LITERATURE REVIEW

"Characteristics of knowledge craftsmen and processing power parallel the traditional craftsmen with experience and skills." (Gregory 1998).

2.1 Objective

The objective of this chapter is to review the existing literature relevant to Strategic Operations and Logistics Planning (SOLP) to determine the extent to which that literature has addressed the fundamental needs of operations management.

Two kinds of fundamental needs are identified: the steps required to formulate an operations strategy and the need for support in the process of formulation (Platts 1993, p.8). The development of concepts in each of these management requirements is critically considered. Reviewing the steps required to create an operations strategy leads to a framework as a basis for empirical research. Analysing the need for support in the process leads to a matrix, which delineates the areas of support provided by various researchers. These requirements preferably follow the preparation of business and marketing strategies by the strategic business unit in the company for which a SOLP is to be prepared.

Major literature areas, which underpin this work, are *Strategic Planning and Management, Manufacturing Strategy,* and *Business Logistics Strategy.* The Strategic Planning literature provides the overall context within which functional strategies are developed. It also provides a fertile field of process methodology, which has been relatively lacking in the manufacturing strategy field. Work in logistics strategy is reviewed to determine how it fits into operations strategy. A critique of Strategic Operations and Logistics Planning in the Australian meat processing industry is carried out. The literature used in deriving the research methodology chosen, Action Research in process development, is also reviewed.

From this review, research hypotheses are developed to begin to close the gaps identified. Empirical work on these hypotheses focuses on the Australian meat processing industry.

2.2 Business and Functional Strategies for Manufacturing Operations and their Drivers

This section describes the *Business* strategy of companies and explains where *Operations* strategy fits as one of the essential *Functional* strategies enabling the business strategy to generate competitive advantage and to apply its resources effectively. It reviews the most important drivers of Operations Strategy and briefly examines its link with marketing strategy.

2.2.1 The requirement for a business strategy and its form

The need for business strategy to direct the development of a company is well-established (For example, Chandler 1962, p. 11-13 and 383; Hofer and Schendel 1978, p. 23-29; and Mintzberg 1975, p. 49-62). The term 'business strategy' rather than corporate planning emphasises the need to determine strategy within a single business rather than across a corporation, which may have a number of separate businesses. Mintzberg and Quinn (1991, p. 5) supply a research-based definition which describes the form that a business strategy should take:

> *A strategy is the pattern or plan that integrates an organisation's major goals, policies and action sequences into a cohesive whole. A well-formulated strategy helps to marshal and allocate an organisation's resources into a unique and viable posture based on its relative internal competencies and shortcomings, anticipated changes in the environment, and contingent moves by intelligent opponents.*

Wheelwright (1984, p. 82) explains the purpose of business strategy:

> *Business strategy generally refers to two critical tasks carried out by each 'strategic business unit'. First, it specifies the scope or boundaries of each business in a way that operationally links the business strategy to the corporate strategy.*

> *Secondly, it specifies the basis on which that business unit will achieve and maintain a competitive advantage.*

A very practical, output-oriented definition of business strategy, is provided by Zairi (1994, p. 161):

> *The overall aim of business strategy is to change the functions of the business so that its effectiveness and efficiency in converting resources into finished goods and services is improved. Desired performance is defined by strategic plans and then measured to improve a company's infrastructure and bottom line results.*

The major contribution of the 'planning' school of the strategic planning process (Mintzberg 1994, p. 39-45), led by Ansoff (1965) is recognised. Ansoff (1984, p. xvi) says

> *Strategic management is a systematic approach for managing strategic change which consists of:*
>
> 1. *positioning the firm through strategy and capability planning;*
> 2. *real time strategic response through issue management;*
> 3. *systematic management of resistance during strategic implementation.*

Ansoff's view of strategic planning is succinctly explained by Mintzberg (1994, p. 43-45).

> *Ansoff's view of strategy was as position and plan, but not perspective: "Strategy is viewed as an 'operator' which is designed to transform the firm from the present position to the position described by the objectives, subject to the constraints of the capabilities and the potential"* (Ansoff, 1965, p. 205). *[Ansoff] gives [important ingredients of the strategic problem] a logical relationship, structures the internal analysis within each, and provides an overall methodology* (1964, p. 74). *Ansoff characterised his model as 'a cascade of decisions, starting with highly aggregated ones and proceeding toward the more specific.'* (1965, p. 210).

Ansoff explains the sequence of decisions required by his planning model as follows:

> *The decision flow proceeds from the first preliminary diversification decisions through three successive preliminary stages based on progressively greater information to the final diversification decision. Following this, a major decision is made on the firm's organisational strategy (synergy-structure decision) followed by successive decisions on four components of strategy (product-market scope, growth vector, synergy, competitive advantage) and culminating in the make-or-buy decision.* (Ansoff 1965, p. 201).

Two important concepts occur in Ansoff's work. The first is 'gāp' analysis, which estimates the difference between the current position of the firm and its objectives (Ansoff 1968, p. 33). The second is 'synergy', which is defined as "any effect that can produce a combined return on the firm's resources greater than the sum of its parts".

Whilst Ansoff's model is attractive to the analyst, this research adopts the overall posture of Mintzberg and Quinn (1991, p. 3-19), in which strategy is seen as intuitive and emerging, as well as planned and intended. Paraphrasing Mintzberg and Quinn (1991, p. 11-12), a strategy should be a succinct statement of the business's goals and the means of achieving them. It should explain the areas of required concentration, in terms of customers, processes, products and organisational structure, without being overly prescriptive. It should be formal enough to be common knowledge to all managers of the business, but informal enough to be malleable with changing circumstances. A strategy is needed to guide all parts of a company in the same direction. Its form is a statement of market, financial and social goals, which is modified according to the management level within the company.

Hofer and Schendel (1978, p. 15) supply a strategy hierarchy which is both persuasive and helpful in formulation. It is identified by a question at each level:

Corporate Strategy	*What set of businesses should we compete in?*
Business Strategy	*How should we compete in the XYZ business?*
Functional Strategy	*What unique resource deployments are required to generate competitive advantage?*

This review briefly examines some contradictions to this neat view of business strategy. Japanese organisations have a very different method of planning which is much less pre-emptive, uses fewer resources in advance and tends to make detailed decisions by consensus on the run (Mintzberg 1983, chaps. 11 & 21). Most Japanese managers are opposed to Western methods of complex, formally-constructed strategic plans. They prefer to set the right general parameters quickly and then carry out "consensus tactical" planning as and when necessary. However, this may be changing. A recent conference in Tokyo (Katayama 1998) was held "to introduce the teaching of manufacturing strategy to Japanese Universities". Katayama presented his work on "Manufacturing strategy linking with KAIZEN" (Katayama 1998, p. 379-384). Kaizen is a Japanese method of continuous improvement (Imai 1986). Maekama (1998), from the perspective of the chairman of a major heavy manufacturing company, painted a preferred picture of industry which is creating a new manufacturing system in which:

- feed forward information should be targeted,
- quality information should be prized over false 'Ba' (Nonaka and Konno 1998, p. 40). 'Ba' is a Japanese word used by Nonaka and Konno to signify a shared space that serves as a foundation for knowledge creation. "Knowledge is embedded in *ba* where it is then acquired through one's own experience or reflections on the experiences of others' (p. 40),
- skills, experience and culture should be the core,
- 'episodic' events in the past should be drawn upon to design the desirable future,
- industry must embrace its context, and
- products and services would appeal to people's emotional rather than material needs, which are saturated.

A second possible contradiction could be the lack of 'flow' from corporate to business to functional plans in some companies. It is argued that lack of a business strategy should not prevent the formulation of a manufacturing strategy since:

a) Construction of a manufacturing strategy could be the stimulus for a business strategy to be formulated (Hill 1989, p. 18); and

b) General managers regularly craft strategy in the middle of a myriad of other activities: they do not necessarily sit around for hours reflecting on the best strategy for the business (Mintzberg 1987, p. 105).

Situations which lack strategy have not been found in the literature, since most planning research involves companies with business plans better developed than those in the meat processing industry in Australia. The meat industry is the focus of this thesis, as described in Chapter 1, section 1.3.

Having found a strong case for having a business strategy and looked at the very different strategic planning approaches of Ansoff and Mintzberg, the review next canvasses the methods of formulating such strategy. Should it be prescriptive or emerging? Most research on strategy formulation has been in the business strategy area, rather than at functional levels. The traditional view (Ansoff 1984, p. 337-348) states that such formulation requires analysis of the opportunities and threats in the environment and examination of the internal strengths and weaknesses of the firm. Strategy formulation within the operations function, according to Platts and Gregory (1992, p. 30-31), is definition of the manufacturing task, in which the first element is manufacturing audit. This traditional, prescriptive approach is essentially analytical and rational. As a contrast, Mintzberg and Quinn (1991, p. 606-609) identified entrepreneurial and adaptive modes and observed strategies emerging rather than being planned deliberately (Mintzberg and Quinn, 1991, p. 13-14). They introduced the definition of realised strategy as a pattern in the stream of actions. Furthermore Mintzberg and Quinn (1991, p. 96-100) reconciled traditional and descriptive extremes by proposing a process of logical incrementalism. This would proceed flexibly and experimentally from broad concepts to specific commitments, where the latter would be delayed as long as possible. They reasoned that strategy dealt predominantly with the unknowable. Within this process, Mintzberg and Quinn (1991, p. 646-650) acknowledged a role for formal planning techniques since they:

- provide a discipline to ensure managers periodically take a careful look ahead,

- require rigorous communications about goals, strategic issues and resource allocations,
- stimulate long-term analyses,
- generate a basis for evaluating short-term plans,
- lengthen time horizons, and
- create an information framework.

Having introduced the contribution and method of formulation of business strategy, the review proceeds down this hierarchy to consider the requirement for functional strategies driven by the business level strategy.

2.2.2 Drivers of Functional Strategy: 1. Competitive Advantage

As businesses grow more complex in terms of technology, specialisation and geographical extent, it is more important for them to have strategic direction at functional levels, such as marketing, manufacturing and logistics. Changing markets and customer preferences are other reasons why strategic direction is required so that all managers may steer towards tomorrow's target, rather than yesterday's.

Porter (1985, p. 33-58) developed the idea of a value chain which requires a series of functions, not always within the same company, to pull together to produce a final product. This product meets customer needs whilst allowing each link in the chain to make a return on its endeavours. Within a strategic business unit (SBU), several major functions successively carry out commercial operations/ transactions to drive the business. These comprise primary functions (inbound logistics, operations, outbound logistics, marketing and sales, service) assisted by support activities (comprising human resource management, technology development and procurement) according to Porter's widely-accepted value chain model. In summary:

> *The value chain is a powerful tool that the strategist needs to enhance competitive advantage. Value-chain analysis allows the manager to separate the activities a firm performs in designing, producing, marketing and distributing its product or service. Competitive advantage ultimately stems from these activities. By showing*

> *how all the firm's activities can be examined in this integrated way, Porter provides a new perspective on competitive strategy* (Porter 1985, book flap).

The literature identifies marketing and operations as the two primary functions which, respectively, create a flow of customer orders and convert raw materials into finished products and services. Functional strategic plans are required to deliver the business goals in higher level plans through satisfaction of customer needs by policies and actions which move the company towards functional objectives.

Norman and Ramirez (1993, p. 54-55) pointed out that Porter's uni-directional model of a value chain is too simple. They argue the concept of a 'value constellation' in which production, service and knowledge are transferred between many companies, or stars, in all directions thus:

> *(Viewing) the offering as the boundary where actors come together to co-produce value leads us to consider actors coming together in 'value constellations'. Value is co-produced by actors who allocate the tasks involved in value-creation among themselves and others, in time and space. This opens up many opportunities for defining relationships between actors and re-assigning activities. The customer is not only a passive user of the offering, but also participates in many other ways in consuming it, for instance in its delivery. An effective offering is thus designed in such a way that partners end up performing the 'right' activities for them, engendering value-creation on all sides. The right activities are those, which successfully match or complement the activity sets the partners are capable of perform(ing), depend(ing) on the partners' available knowledge and resources.*

The clearest demonstration of the need for companies to have a functional strategy comes from considering the achievement of a business level aim, such as increasing market share through greater proficiency. Most of the decisions that are required to improve efficiency and effectiveness occur at a functional level, within manufacturing or marketing. Hence, functional strategy is necessary to become more competitive and so increase market share.

2.2.3 Drivers of Functional Strategy: 2. Resource-based Firms

The acclaim in which Porter's (pre-eminent among others) market-based view of the firm (1985, chapters 2 and 7) is held and the popular emphasis on marketing and consumerism has blinded many people to the existence of another important driver. This driver is the possession of adequate resources, including equipment and employees, from which to make sales. Work by Mills et al. (1998, p. 156-62) examines the merits of a resource-based view of the firm in providing a valuable perspective for formulation of manufacturing strategy. In contrast to this market-based view, Penrose (1959) takes the view that a firm's resources can be built into a 'basic position' from which external threats can be survived and opportunities capitalised upon.

This theory asserts that many company resources, for example social networks involving suppliers, customers or advisers; its systems and procedures; its culture and values; or its knowledge and expertise, are individual to the firm. Since some of these resources may be valuable and difficult to copy, they may be sources of *sustainable* competitive advantage (Mills et al. 1998, p. 156).

This perspective is known as the Resource-based Theory of the Firm (Wernerfelt 1984, p. 171-80). Recent writers in the field (Prahalad and Hamel 1990, p.79-91) have coined the description 'core competency' to describe "*a bundle of skills and technologies that enables a company to provide a particular benefit to customers*" (1990, p. 79-91). The present work proceeds from the belief that the resource-based view deserves considerable attention. Empirical evidence has established that manufacturing companies have rich possibilities for creating sustainable, profitable positions, although most manufacturing scholars have not used the resource-based perspective (Mills et al. 1998, p. 156).

2.2.4 The Operations Function in the Business Strategy

The work of many manufacturing strategy researchers (for example, Hill 1989, p. 17-19 and Vollman, Collins, Nakane and Anderson 1992, p. 57-88) demonstrates that a restructured manufacturing function focussed upon the criteria required by customers can predicate the success of the business.

In the past, corporate plans have frequently contained market plans and product sales projections to which manufacturing is expected to be a passive responder (For example, John Lysaght (Aust.) Ltd 1977). Skinner says (1978, p. 4):

> *Top management seemed to be dominated and influenced more by executives who were especially competent in marketing and finance and less by those with a manufacturing point of view. Manufacturing people felt that they were being asked to do their duty and perform as good soldiers, doing what was asked without complaint* (Note: this work uses 'Operations' where Skinner uses 'Manufacturing' with the same meaning).

And further:

> *Industry adoption of the concepts and techniques I will call 'manufacturing in the corporate strategy' has been held back by strong instinctive premises and mind-sets cloned into generations of managers. (This) barrier describes a negative environment which we will have to take as a given for the time being* (Skinner 1992, p. 13).

Important contributions by Skinner were his ability to articulate the importance of operations to companies. He drew on his detailed knowledge of operations (1978, p. 7); his identification of the need for trade-offs in the design of manufacturing systems (1969, p. 136); and his concept of the 'focussed factory' (1974, p. 113).

Platts and Gregory (1992, p. 32) criticise implementation of manufacturing systems dominated by engineers and cost reduction:

> *Traditionally, improvements to manufacturing systems have been initiated by engineers with insufficient information about the business context. Often cost reduction has been the primary aim, with little awareness of non-cost factors such as quality and delivery performance. The result is that manufacturing systems have evolved which do not satisfactorily contribute to the competitive position of the company. Many companies do not have an explicit strategy for manufacturing and they do not know how to set about creating one, even if they recognise the need.*

Based on the work of Skinner (1986) and Hill (1989), Menda & Dilts (1997, p. 223-4) conclude that the operations function has failed to achieve strategic competitive

advantage. Few firms tailor their production systems to perform the tasks that are critical to corporate success. Although most firms within an industry share access to the same processing technology and manufacturing infrastructure, they are not equally successful in linking those aspects to the criteria critical to winning orders.

It is now clearly recognised that operations is a key component of business strategy. Drucker says (1969, p. 121):

> *Management's job is always to push back the limitations set by the hard reality of physical production facts. It must so manage its business as to convert these physical limitations into opportunities.*

An excellent summary of the correct place of manufacturing strategy in business strategy is provided by Bennett and Forester (1993, p. 140):

> *Following the lead by Skinner, there have been numerous calls for the design of manufacturing operations to be considered an important element in the corporate strategy of an organisation. The work of Porter (1985) was also germane to this new view of manufacturing, demonstrating how corporate management texts provide lessons for manufacturing managers wishing to adopt a top-down and market-oriented approach to operations.* (Note: 'Operations' is used again with the same meaning as 'Manufacturing').

2.2.5 Links between Operations and Marketing Strategies

This section examines the relevant links between marketing and operations strategy. These two key functions need to interact on a broad basis if the potential of a common business strategy is to be achieved (Hill 1989, p. 31-38; Berry and Hill 1992, p. 3-15). A good definition of marketing is given by Kotler (1983, p. 6-14):

> *Marketing is a human activity directed at satisfying needs and wants through an exchange process. Sellers learn how to professionalise their marketing management (which) is the analysis, planning, implementation and control of*

programs designed to create, build, and maintain beneficial exchanges with target buyers for the purpose of achieving organisational objectives.

Kotler proceeds (p. 45-46) to define a market planning system:

Every company must determine where it wants to go and how to get there. Companies use two systems - Strategic-planning systems make sure the company develops strong businesses and phases out its weaker businesses. Market planning describes the act of planning for each individual business, product or brand within the company. The (marketing) manager will first prepare a five-year plan that describes the major forces affecting (its) markets, the five year objectives, the major strategies that will build market share and profits, the capital required and the profits expected.

These definitions are somewhat naive in their prescription of top-down planning and their assumptions of process, but the major elements of purpose, customers, products and specific plans are common with the foregoing descriptions of business strategy and operations strategy. It is also informative to note that Kotler (1983) does not consider manufacturing operations important enough to be mentioned as a section or an index reference in this book.

A number of authors, led by Skinner (1978, p. 4) have observed the extra attention given to marketing compared to operations. A case is therefore made, from work by Hill (1980, p. 3-11), for a manufacturing strategy resulting from "*an iterative process involving marketing and manufacturing jointly developing a competitive position in which each supports each other*". A critical step in this process is (Hill 1989, p. 36):

(Managers should) *ask market-oriented questions requiring manufacturing answers. These questions concern distinguishing how different products win orders in their respective markets. In developing a manufacturing strategy, the identification of order-winners for different products is a key step.*

Such joint (marketing/operations) strategy formulation enables operations to craft a coherent set of strategies before marketing and business strategies are finally determined.

It is consistent with the view that firms should be driven by a clearly designed set of resources as well as by market forces (Mills 1998, p. 156-61). Hence, marketing managers should be involved in operations strategy formulation, leading to strategies which properly take account of operations issues, and resources which are driven by real customer needs.

This important need for market analysis is further explained (Hill, Staughton and Westbrook 1995, p. 226):

> *The development of a manufacturing strategy requires market analysis. A company must understand what is demanded by each of its products, and/or by each of its customers, in its chosen market segments. There are various methods for developing such an understanding, such as the concept of order winners and qualifiers. But whichever approach to market analysis is used, it is essential that it is thorough, they* (sic) *address all aspects of the needs of markets and the results are expressed in an appropriate level of detail.*

Important research in this area was reported in a special issue of the International Journal of Operations Management (Berry, Hill, Klopmaker and McLaughlin 1991, p. 294-419). This research tested the notion "*that improved competitive performance can be obtained by incorporating market analysis and marketing strategy considerations in the formulation of operations strategy*" (p. 295). The four main conclusions are:

- *Market analysis is viewed as an important prerequisite for strategy formulation in marketing and operations,*
- *A variety of functional perspectives (in addition to those of marketing and operations) is critical in strategic debate,*
- *The concept of marketing focus needs to be carefully defined in the development of manufacturing strategy, and*
- *Methodologies that have not been traditionally applied in operations can provide new insights into the formulation of operations and marketing strategies (1991, p. 297-8).*

Hence, this work indicates the importance of linking the strategic planning of operations to marketing in manufacturing industries. It suggests the use of new methodological approaches, particularly market segmentation techniques, to characterise the market served by a company in terms of the requirements placed on operations.

2.3 A Definition of Strategic Operations and Logistics Planning

This section reviews the individual components of the definition before bringing them all together for the purpose of the thesis. Section 2.5 defines the process of SOLP.

2.3.1 Components

The *Business* strategy of companies has been described and the place where *Operations* strategy fits as one of the key *Functional* strategies enabling the business strategy to generate competitive advantage has been explained. Next, the meaning of the area being studied, Strategic Operations and Logistics Planning (SOLP) is defined by assembling explanations of its constituent parts.

Mintzberg and Quinn's (1991, p. 5) definition of business strategy, quoted in section 2.2.1 above, says that it is the pattern that integrates an organisation's goals and actions so that its resources are arranged into a unique posture to cope with anticipated environmental and competitive moves. Whilst such a business strategy supplies the forward direction for a complete strategic business unit, it is now recognised that a functional strategy is required for each function, such as marketing and operations, to support the business strategy. The meaning of the word 'strategy' has widened notably over time. From applying to the policies to achieve aims for a particular business, it is now applied to the key policies for each function and, indeed, to the key policies for individual product groups within each function (Hill 1989, p. 36-7 and Platts and Gregory 1992, p. 47-8). Strategic Operations and Logistics Planning works at this functional level rather than with the complete business strategy.

The particular functional strategy addressed by this work, manufacturing or operations strategy, is now defined. The word 'manufacturing' strategy is predominantly used in this

sub-section because it is the word used by the authors whose work is reviewed. Nevertheless, the meaning is the same as 'operations' strategy, which is used in the rest of this thesis. In the words of Skinner (1966, p. 139):

> *The articles led me from a study of what seemed to be going wrong to a different way of looking at manufacturing within the corporation. Essentially, what I recommended was an approach to manufacturing from the top down that is based on the recognition that manufacturing can become a major corporate competitive weapon. The new approach starts with the role of manufacturing in the corporate strategy, a link that had been missing, and it leads to a strategy for making consistent and focussed basic policy decisions in the design and management of manufacturing operations.*

In other words, operations strategy is a functional level strategy, which can be viewed as "the effective use of manufacturing strengths as a competitive weapon for the achievement of business and corporate goals." (Swamidass and Newell 1987, p. 509-23).

These overall definitions were refined by Hayes and Wheelwright (1984, p. 32 based on Hayes and Schmenner 1978, p. 105-118) to specify the kinds of decisions, or content, required in manufacturing strategy:

> *This pattern of structural and infrastructural decisions constitutes the "manufacturing strategy" of a business unit. More formally, a manufacturing strategy consists of a sequence of decisions that, over time, enables a business unit to achieve a desired manufacturing structure, infrastructure, and a set of specific capabilities.*

Hill (1994, p. 41) further explains the need for manufacturing strategy and develops the definition to explicitly include markets:

> *Turning the business around, however, will only be achieved by switching from an operational to a strategic mode, which will require a corporate review of the marketing and manufacturing perspectives and of the financial implications of the proposals.*
>
> *Manufacturing strategy comprises a series of decisions concerning process and infrastructure investment, which, over time, provide the necessary support for the relevant order-winners and qualifiers of the different market segments of a company.*

After studying the evolution of the concept of manufacturing strategy, this research adopts the last definition by Hill (1994) because it embodies four necessary parts:

- the relationship between business and manufacturing (i.e. operations) strategy;
- the kinds of decisions, or content, required in the strategy;
- the first driving force for the manufacturing strategy, the order winners which win business in each market segment; and
- the second driving force for the manufacturing strategy, the construction of a set of resources which are likely to enable products and services to be sold.

Following this explicit definition of manufacturing strategy, the area included in SOLP is widened in scope beyond manufacturing, without altering the three parts listed. The extra scope comprises operations and logistics.

Operations strategy differs from manufacturing strategy in considering a wider view of the function. Slack et al. (1998, p. 6) define "the *operations function* of the organisation as the arrangement of resources which is devoted to the production of its goods and services". Note the inclusion of services in operations whereas manufacturing predominantly refers to physical goods.

The functional area of logistics is now added because of the desire to manage the whole supply chain across corporate boundaries. The Council of Logistics Management (Bowersox and Closs 1996, p. 4) defines logistics as follows:

> *Logistics is the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements.*

The broader role of logistics is explained by Fabbe-Costes and Colin (1994, p. 37):

> *In order to satisfy its ideal objectives of continuity and fluidity, logistics has progressively left behind its original operational role, which was a combination of transport, handling and warehousing operations. The concept of a logistics chain enabled firms to control flow from downstream to upstream and to optimise, in terms of cost and level of service, the whole physical movement pulled by demand.*

Generalising from Bowersox and Closs (1996) and Fabbe-Costes and Colin (1994), Slack et al. (1998, p. 511) supply a good definition of supply chain management, by which they mean the same as logistics in the last quote:

> *Supply chain management has been developed into a concept with a much broader span of concern and an holistic approach to managing across company boundaries. It is recognised that there are substantial benefits to be gained from strategically trying to drive a whole chain in the direction of satisfying end customers.*

2.3.2 Overall Definition

Combining this wider functional area with Hill's definition (1994, p. 41), it can be seen that Strategic Operations and Logistics Planning is a process which enables development of overall direction and the actions required to move in that direction for the operations function of a manufacturing company and its supply chain partners for a set of customers in chosen markets. Such SOLP is a functional strategy, responding to, and influencing, a given set of business and market strategies in order to effectively procure materials, transform them into products and services and deliver those products to end consumers.

SOLP transcends company boundaries. It intends to direct such functions in all members of the supply chain so that, collectively, effective supply of goods and services is rendered to the chosen set of customers. It is a planning process because it assists in the formulation of strategy in an action-oriented form.

Published work on the concurrent formulation of strategic plans for both operations and logistics has not been found. However, valuable work has been carried out in Manufacturing Strategy, which will be reviewed.

2.4 Previous Work in Manufacturing Strategy

This section demonstrates, from previous work mainly on content, that a manufacturing strategy is useful to companies. It goes on to show that more work is needed to develop strategy process and provides a framework to delineate the steps, or stages, required.

2.4.1 The requirement for a Manufacturing Strategy

Skinner (1969, p. 136) first enunciated the need for manufacturing operations to have a functional strategy. This strategy enables the operations both to line up with corporate competitive emphasis and to focus its considerable resources on increasing the competitive advantage of the company's products. Hayes and Wheelwright (1984, p. 396) say that the company should aim to be externally supportive of the company's competitive stance.

Hayes and Schmenner (1978, p. 108) and Hayes and Wheelwright (1984, p. 39-41) make important observations about the need for functional manufacturing strategy to be responsive to the attitudes and preferences that underlie a company's business strategy. Such important preferences are the firm's attitude towards:

- growth,
- the role that manufacturing should play in the business strategy, and
- the relative emphasis placed upon the competitive dimensions of price, quality, dependability and flexibility (p 38-41).

Hayes and Wheelwright further incorporated the idea of strategy being a pattern of decisions, as stated by Quinn (1980, chapter 1), into manufacturing strategy. They generated the useful definition (1984, p 32): "*a manufacturing* (or operations*) strategy consists of a sequence of decisions that, over time, enables a business unit to achieve a desired manufacturing structure, infrastructure, and a set of specific capabilities.*"

Present concepts of the form that a manufacturing strategy should take build on the work of Hayes and Schmenner (1978, p. 109) and Hayes and Wheelwright (1984, p. 31-4). They state that decisions are required in eight content areas to support the competitive emphasis of the business: capacity, facilities, technology, vertical integration, workforce, quality, production planning/ materials control and organisation.

Adam and Swamidass (1989, p. 181-203) provide a helpful review of common themes and missing themes in manufacturing strategy (MS) research some ten years ago. They confirm the finding that the process of formulating and implementing MS is important for guiding manufacturing. They isolate seven themes missing from MS:

- Operations strategy research needs distinct research streams investigating strategy content and strategy process,
- Strategic planning is an important strategy process tool for operations management,
- Operations strategy theory development should use empirical research as building blocks,
- Major themes in operations management literature such as Just-In-Time, productivity and quality are not integrated into manufacturing strategy,
- The real test of operations strategy is its effect on operating and overall performance,
- The development of taxonomies and classification schemes would improve operations management and strategy, and
- Operations management needs to reflect the international context of business.

The first five themes are the most relevant to the present research because they focus on manufacturing strategy.

2.4.2 Strategy Content

A major divide in Manufacturing Strategy (MS) Research has been between *Process* and *Content.* Process research concentrates on the steps which managers take in order to derive a strategy for their manufacturing operation. This section first deals with Content research in MS which concentrates on the particular areas in which decisions need to be made and aims to be as prescriptive as possible in these areas. Next the relevance of resource-based and competence views of the firm for manufacturing strategy are examined. In a later section (2.6) content is broadened to include internal and external logistics functions.

A large amount of MS research has been into content (see Adam and Swamidass 1989, p. 181-203; Anderson, Cleveland and Schroeder 1989, p. 133-57; Kim and Lee 1993, p. 3-15; and Lee 1992, p. 297-317). Whilst the generally agreed content variables (Hayes and Wheelwright 1984, p. 31; Hill 1989, p. 33; and Platts and Gregory 1990, p. 18) are accepted, it may be argued that content should not be prescribed. Prescriptive content may be dangerous in competitive situations because it could reduce the ability of managers to assemble a more distinct and attractive offering for customers. An alternative is to provide general content variables but encourage team members to modify them to fit their business (Bourne et al. 1996, p. 10). 'Strategy Charting' may also be used to examine the content of strategic development (Mills, Neely, Platts, Gregory and Richards 1994). By concentrating on objectives and actions, a rich view of the content of past strategies may be built (Mills et al. 1998, p. 153). Section 2.5.4 discusses the importance of strategy charts to the strategy formulation process.

2.4.3 Strategy Process

It is well-accepted in the literature (Marucheck, Pannesi and Anderson 1992, p. 89-120; Platts and Gregory 1990, p. 10) that too little research into process has been carried out. Consequently, it is argued that research should focus on process, believing that process is

very important to support managers in their cognitive and consensual crafting of appropriate strategy.

Hayes and Wheelwright (1984, p. 396-401) developed clear guidelines for the ultimate aim of operations strategy, by identifying four stages of development of manufacturing's strategic role. Table 2.1 restates one of their tables (Hayes and Wheelwright 1984, table 14.2, p.396) to explain the four stages. The following quote (Hayes and Wheelwright 1984, p. 396-399) describes how the four stages may be recognised:

> *Stage 1 is the most passive and least progressive view of manufacturing and its competitive role whilst stage four is the most aggressive and progressive role. We consider stage 1 to consist essentially of an internally neutral perspective: management regards manufacturing as neutral at best and seeks simply to minimise any negative impact that it might have. Firms in the second stage of manufacturing's strategic role seek competitive neutrality on the manufacturing dimension* (and) *therefore we describe this stage as externally neutral. Like the firms in stage 1, firms in stage 2 see manufacturing's role as neutral at best, but they define that role in relation to "industry practice".*

> *The third stage is one in which the firm expects its manufacturing organisation to provide credible and significant support to its overall competitive strategy. We describe this stage as internally supportive, in that manufacturing's contribution is derived from and dictated by a business strategy. The fourth and final stage of manufacturing's strategic role is when a firm's competitive strategy is based to a significant degree on its manufacturing capabilities. In such firms the role of manufacturing is what we call externally supportive. Stage four firms also put careful thought into developing a manufacturing strategy but they tend to regard it somewhat differently than do stage 3 firms.*

Stage 1- Minimise Manufacturing's Negative Potential: "Internally Neutral"
• External experts are used in making decisions about strategic manufacturing issues • Internal management control systems are the primary means for monitoring performance • Manufacturing is kept flexible and reactive
Stage 2- Achieve Parity (Neutrality) with Competitors: "Externally Neutral"
• "Industry Practice" is followed • The planning horizon for manufacturing investment decisions is extended to incorporate a single business cycle- • Capital investment is regarded as the primary means for catching up to competition or achieving a competitive edge
Stage 3- Provide credible support to the Business Strategy: "Internally Supportive"
• Manufacturing investments are screened for consistency with business strategy • Changes in business strategy are automatically translated into manufacturing implications • Longer-term manufacturing developments are systematically addressed
Stage 4- Pursue a Manufacturing-based Competitive Advantage: "Externally Supportive"
• Efforts are made to anticipate the potential of new manufacturing practices/ technologies • Manufacturing is centrally involved in major marketing and engineering decisions • Long-range programs are pursued in order to acquire capabilities in advance of needs

Table 2.1 Stages in the Evolution of Manufacturing's Strategic Role (Hayes and Wheelwright 1984, p. 396)

Hayes and Wheelwright (1984, p. 395-408) did not provide a process which would enable manufacturing firms to reach these stages. The necessary framework for SOLP was set up by Hill (1989, p. 31-36) and this is described in the next section. Since Hill's work, an increasing amount of research has examined the process of operations strategy to define the parameters and to determine the amount of support required to enable operations managers to formulate such strategy. The review will examine the work of the eight most important pieces of strategy research to summarise their contribution, to find out what supports for the process have been proven necessary and to point to any gaps. It then proceeds to examine Platts' work (Platts and Gregory 1990; Platts 1994; and Platts,

Mills, Neely, Bourne and Richards 1998) in considerable depth, since this is considered the most comprehensive.

2.4.4 Strategy Formulation Method by Hill

Hill (1989, p. 31-36) derived five steps to be used with his framework to formulate strategy (see also Table 2.2):

- determine the objectives of the business because functional inputs need to be linked to them,
- develop a marketing strategy, comprising situational analysis of markets by product groups and market objectives for each group,
- find out how products win orders in the marketplace (order-winning criteria),
- choose the best process from a number of alternatives to make the particular products, and
- choose the manufacturing infrastructure (i.e. all non-process features) required.

These steps clearly define and order the tasks that must be accomplished to formulate operations strategies.

2.5 Process Steps of Strategic Operations and Logistics Planning

Given the form and stages of a manufacturing strategy, a process is now required to enable operations managers to formulate good strategies. This section will first review the systematic planning process advocated by the Planning School of Strategic Management before examining the particular processes which have been developed to support the formulation of an operations functional strategy.

Corporate Objectives	*Marketing Strategy*	*How do Products Qualify and Win Orders in the Marketplace?*	*Manufacturing Strategy*	
			Process Choice	*Infrastructure*
• Growth • Survival • Profit • Return on investment • Other financial measures	• Product markets and segments • Range • Mix • Volumes • Standardisat'n versus customisation • Level of innovation • Leader versus follower alternatives	• Price • Conformance quality • Delivery Speed Reliability • Demand increases • Colour range • Product range • Design • Brand image • Technical support • After-sales support	• Choice of alternative processes • Trade-offs embodied in the process choice • Role of inventory in the process configuration • Make or buy • Capacity Size Timing Location	• Function support • Manufacturing planning and control systems • Quality assurance and control • Manufacturing systems engineering • Clerical procedures • Compensation agreements • Work structuring • Organisational structure

Table 2.2 Framework for Reflecting Manufacturing Strategy Issues in Corporate Decisions (steps involved) (Hill 1989, p. 33)

2.5.1 Relevant Formulation from Business Strategy

This section reviews the planning school approach, described above in section 2.2.1, to isolate the steps required in formulation using Hofer and Schendel's review (1978, p. 46-47). Their seven formulation steps are:

- strategy identification,
- environmental analysis,
- resource analysis,
- gap analysis,
- strategic alternatives,
- strategy evaluation, and
- strategic choice.

It is argued that formulation steps are not sufficient to enable managers to craft strategies. The extra requirement is for support with each task and means of helping the planning team devote sufficient time on strategic planning over a number of weeks. The answer to this is considered to be the Manufacturing Audit Approach (Platts and Gregory 1990, p. 6-26) which is considered in section 2.5.3, but first section 2.5.2 examines other possible processes.

2.5.2 Possible Processes

A number of possible processes are reviewed to ascertain whether they give the necessary support to a group of operations and other functional managers who wish to craft strategies for their situations.

First consider the work of Hill (1989, p. 24-46) which provided the formulation framework reviewed above. Hill defines the tasks needed to formulate manufacturing strategy but he does not provide support for those tasks. He provides order winning and qualifying criteria, as originator of the concept, which he defines as follows:

> *Manufacturing's strategic task is to provide, better than the manufacturing functions of competitors, those criteria that enable products to win orders in the marketplace. An essential part of manufacturing's task is to recognise and apply the concept of order-winners and qualifiers. 'Qualifiers' are those criteria that a company must meet for a customer even to consider it as a possible supplier. Suppliers who [attain these qualifiers] have only achieved the right to be considered. Attaining these criteria does not win orders. 'Order-winners' are those criteria that win the order* (Hill 1989, p. 35 and 44).

Hill does not envisage a group of managers working together and he does not supply any evidence of being present during strategy formulation. He does not report field studies, rather his work is reported as anonymous cases. He talks about operationalising strategy and changing manufacturing policies but he does not provide support for such a change. Hill does not carry the work through to Action Plans nor does he incorporate supply chain logistics into MS formulation.

The paper "A Review of Empirical Manufacturing Strategy Studies" (Minor, Hensley and Wood 1994, p. 5-25) provides a useful list of empirical studies up to 1991 in which suitable processes may be identified. Confining the present attention to field studies of process, since questionnaires and interviews do not give detailed strategy development, Minor et al. cite two studies of MS formulation observed in actual situations. The originals of these two studies are examined for relevant processes.

The first, Marucheck et al. (1990, p. 89-120), essentially studied six companies after they had carried out MS formulation.

> *(The researchers) collected data during a conference in which industry representatives described how manufacturing strategy was practised in their firms. The final list of participants consisted of six firms representing the following industries: computer equipment and electronic instruments, telecommunications, furniture, petroleum (electrical submersible pumps), valves and pharmaceuticals. Each firm was represented by at least one person at the level of Vice President of Manufacturing or higher. (All of) the presenters had been involved in the process of formulating manufacturing strategy for the corporation. To provide a common background and format for the presentations, the participants were provided with a definition of manufacturing strategy and a list of issues to address.*

Because of the lack of field research, it is unlikely that the researchers obtained an intimate knowledge of the process of formulating strategy in those companies. The researchers did not define the tasks needed to formulate strategy nor provide any support for those tasks. They did not use order winning criteria nor incorporate logistics variables. In summary, Marucheck et al. provided no support for strategy formulation and drew on only some of the steps required.

The second process cited by Minor et al., Fine and Hax (1985, p.36), appears to cover all the steps required by operations management. They recommend the following structure to develop MS:

1. link business strategy to MS: identify the manufacturing requirements imposed by the broad action programs of each strategic business unit;

2. initial manufacturing strategic audit: describe the major policies pertaining to each MS decision category and assess the corresponding strengths and weaknesses against the leading competitor;

3. group products by positioning the product lines in the product or process life-cycle and by assessing commonality of performance objectives and "product family missions" (similar to order winning criteria);

4. examine the degree of focus existing at each plant. A product-process matrix[*defined below]* is plotted for each plant. This matrix allows us to judge the degree of plant focus and to examine the degree of consistency between the products and the processes employed to manufacture them;

5. develop MS and suggest allocation of product lines to plants. This step states strategic objectives to be articulated through broad action programs for each of the nine MS decision categories (These categories are facilities, capacity, vertical integration, process/ technologies, scope/ new products, human resources, quality management, manufacturing infrastructure and vendor relations). Then, for each MS decision category, spell out the corresponding specific action programs. Consider re-allocations of products to plants if the previous analysis suggested such a change.

A product-process matrix is a means of matching major stages of product/market requirements with stages in process technology as shown in Figure 2.1 (Hayes and Wheelwright 1979, p. 133-136). The rows in this matrix represent the major stages through which a production process tends to pass in going from the fluid form to the systemic form. The columns represent product life cycle phases that progress from the great variety associated with the product's initial introduction to the standardisation associated with commodity products. A product line can be characterised as occupying a particular region in this matrix, as determined by its stage in the product life cycle and its stage in the process life cycle.

Fine and Hax report the implementation of their method in Packard Electric, a component division of General Electric, by a masters student. Fine and Hax are seen to provide the steps required for successful MS formulation. However, there is limited support for the

tasks required and it is not clear whether their application used the power of a team of managers working together to achieve the results. Their action plans are not sequenced and supply chain variables are not included.

<table>
<tr><th>Process structure

Process life cycle</th><th>I
Low volume, low standardisation, one of a kind</th><th>II
Multiple products, low volume</th><th>III
Few major products, higher volume</th><th>IV
High volume, high standardisation, commodity products</th></tr>
<tr><td>I
Jumbled flow (job shop)</td><td colspan="4" rowspan="4">Commercial Printer

Heavy Equipment

Auto Assembly

Void

Sugar refinery</td></tr>
<tr><td>II
Disconnected line flow (batch)</td></tr>
<tr><td>III
Connected line flow (assembly line</td></tr>
<tr><td>IV
Continuous flow</td></tr>
</table>

Figure 2.1 The Product-process matrix (Hayes and Wheelwright 1979, p.133-136)

Jouffrey and Tarondeau (1990, p. 167-8) envisage operations strategy (they use the word *industrial* strategy) as comprising two cycles. The first cycle is market development and

the second is a manufacturing cycle. They consider that industrial strategy should aim to create global consistency between product-market strategy, industrial and logistics technologies, and organisation and information systems. They see three phases in strategy formulation:

- analysis of the existing industrial system,
- diagnosis of the target industrial system, and
- strategic orientations necessary to reach the desirable future industrial system.

Jouffrey and Tarondeau applied their method to a French manufacturer of programmable logic controllers owned by the company Merlin Gerin. They concluded that:

> *This industrial strategy formulation method counts numerous advantages. It integrates the company's strategic objectives, takes their capacities and particular competencies into account, offers a conceptual framework for analysis, ensures consistency between products-industrial processes-organisation and information systems, integrates the time dimension and helps build methodically an action plan.*

Hence, Jouffrey and Tarondeau invented a set of process steps, which enabled a company to design a future direction in line with the business strategy that contributes to better performance. They were clear about the need to examine internal and external industrial processes, that is supply chain members, although they do not show this being done in practice. Jouffrey and Tarondeau were present at a field application of their steps but they do not record any support to the company to achieve operations strategy or to tailor the steps to the individual company.

Menda and Dilts (1997, p. 227-35) worked in a pharmaceutical company with a core group of eight managers in a combination of interviews and group discussions plus reviews of company documents. Their particular interest was linking multi-functional viewpoints. They went through the following steps:

- analysis of corporate mission and marketing plans,
- determination of order winning criteria, and
- linking key manufacturing tasks to order-winning criteria.

They formed the view that additional steps over those provided by Hill (1989, p. 31-36) were required. They also expose 'significantly different views' among the managers. Menda and Dilts spent a lot of time deriving order winning criteria but the conversion of these into manufacturing tasks was done in one meeting. They stopped before the group had either evaluated the company's manufacturing process and infrastructure in the light of their findings or made the necessary re-alignments. Hence Menda and Dilts are considered to have provided considerable support to the operations managers but to have omitted to follow all the steps required to ensure an effective MS was formed. They made no attempt to include logistics issues.

Miller in his book "Competitive Manufacturing" (1988, p. 163-80) develops a process called the 'Management Row Game'. This process enables large numbers of managers (40 to 70 people) to consider how the manufacturing function should support business strategies and what actions are necessary to get different functions working with each other. This is carried out in the following six stages:

1. The business unit is defined, the key players are identified and the business strategy is determined from senior management.
2. Field interviews are conducted with the key players to determine the critical issues.
3. Discussions with senior managers and the general manager lead to a plan with agreed-upon principal issues.
4. A number of important functional managers are selected to make presentations during a two-day workshop.
5. The workshop is held with active participation from both presenters and the non-presenters.
6. Inter-functional task forces are then organised to act on the most critical problem.

This process has been applied to twenty different businesses. Miller summarises the results obtained as follows:

> *There is no question that the workshops' success as a communications vehicle helps the functional managers work as a business team. Largely because of their participative quality, they stirred up much potential in the organisations involved*

> *and made these functional managers much more ready and willing to integrate their planning. The managers learned what was and what was not important to the other functions, and at the very least they took the trouble to check with each other on the most critical factors.*

Miller's work is strong on the support it provides for managers but it lacks several of the steps considered necessary to formulate operations strategies. It does not include logistics issues.

Voss (1992, p. 121-132) investigated the process of operations and marketing strategy formulation in four manufacturing companies. Gaining access via the manufacturing director, he carried out field-based case research by interviewing the executives involved in the development of operations strategy. In some cases, he was a participant observer. The case data was analysed to discover decisions and activities in the sequence of strategic operations plan formulation. Four common elements were found:

- triggering the process, which could be by competitive threats or by internal issues such as lack of focus;
- determining the scope, which ranged from manufacturing and marketing strategies for all product lines to development of strategies for computer integrated manufacturing for a specific site;
- managing the process, which comprised choice of a process leader and of a facilitator, selection of the team members and the pattern of interaction followed by the team. An iterative part of the process was a cross-functional seminar workshop followed by analysis; and
- analysis comprised marketing, manufacturing and competitor sections. Unlike other work reported, Voss found different paradigms in different cases. The approach of Hill (1989, p. 31-36) was used in two cases.

Voss's (1992, p. 130-32) findings are summarised in Figure 2.2. This shows a common process of manufacturing strategy which is consistent with Hill's five stage model (Hill, 1989, p. 31-36). In longitudinal terms, Voss found that stage one was analysis of marketing, manufacturing and competitors. Stage two developed a vision of an 'ideal'

factory which responded fully to future market needs. Stage three was justification of the actions needed and, if necessary, reworking the analysis. Important findings for the present work were that the nature of the cross-functional team was a function of the scope of the strategy creation, and that a variety of paradigms and methodologies were used to carry out the analysis part of the formulation.

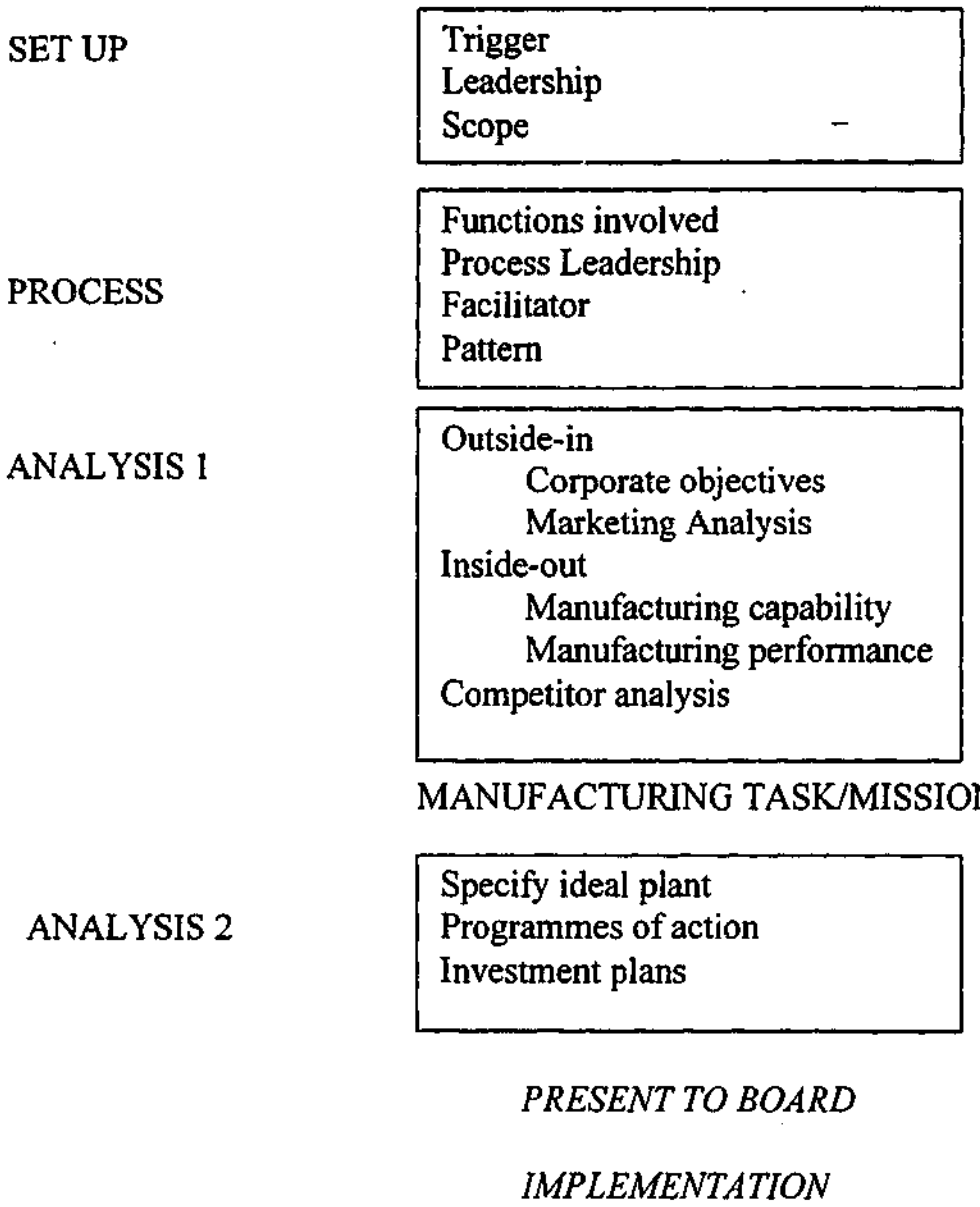


Figure 2.2 Process of formulating manufacturing strategy (Voss 1992, p. 131)

2.5.3 Summary of Processes

Table 2.3 summarises the extent to which the various authors discussed the process steps considered necessary to formulate operations strategies and the extent of support that they provide for that process. The next section describes the process in more detail so that its ability to meet the criteria required to formulate MS can be clearly seen (it will be used as a foundation for the research in this dissertation).

Comparing the process steps used by eight different authors in Table 2.3, it can be seen that all the authors define the tasks needed, although two do so to a limited extent. Four out of the eight authors consider order winning criteria as a formulation step. Four of the eight include the re-alignment of manufacturing policies. Only two of the authors have a step approaching a time-sequenced Action Plan. One author makes some provision to incorporate logistics operations policies in the process.

Comparing the supports provided by various authors in Table 2.3, three authors provide some support for each task in strategy formulation. All authors have carried out field-testing; in fact, this was an essential factor in choosing this set of authors. The use of group consensus to devise operations strategies was used by four of the eight authors. Only one author (Menda and Dilts 1997, p. 227-35) tailored their supports to the needs of the particular industry. The majority, six out of eight authors provided external facilitation to assist strategy formulation. None of the authors involved supply chain partners in the formulation process.

This analysis of possible processes leads to a practical framework for formulating strategic operations plans.

STAGES	Hill (1989)	Maru-check (1990)	Fine & Hax (1985)	Jouff-rey & Taron. (1990)	Menda & Dilts (1997)	Miller (1988)	Platts and Greg. (1990)	Voss (1992)
1. Define the tasks needed	✔	✔	✔	P	✔	✔	✔	✔
2. Order-winning criteria	✔	✘	✔	✘	✔	✘	✔	P
3.Re-aligned manufacturing policies	P	✘	✔	✔	✘	✘	✔	✔
4. Sequenced Action Plans	✘	✘	P	✘	✘	✘	P	✘
5. Incorporating Logistics	✘	✘	✘	P	✘	✘	✘	✘
SUPPORTS								
6. Support for each task	✘	✘	✘	✘	P	✔	✔	✘
7. Field testing	✔	P	✔	✔	✔	✔	✔	✔
8. Group consensus	✘	✘	✘	✘	✔	✔	✔	✔
9. Tailored to the company	✘	✘	✘	✘	✔	✘	✘	✘
10. External Facilitation	✘	✘	✔	✔	✔	✔	✔	P
11. Supply chain partners involved	✘	✘	✘	✘	✘	✘	✘	✘

Legend: ✔ - Author(s) covers that area ✘ - Author(s) does not cover area
P - Author(s) partially covers area

Table 2.3 Comparison between methods of various authors

2.5.4 Platts and Gregory's Framework: The Manufacturing Audit Approach

A more practical framework for manufacturing strategy is that provided by Platts and Gregory (1990, p. 15). They draw on the work of Hofer and Schendel (1978) and Hill (1989, p. 31-36) in deriving this framework. Figure 2.3 is Platts and Gregory's framework, which assumes the prior existence of a business strategy, in some form. The

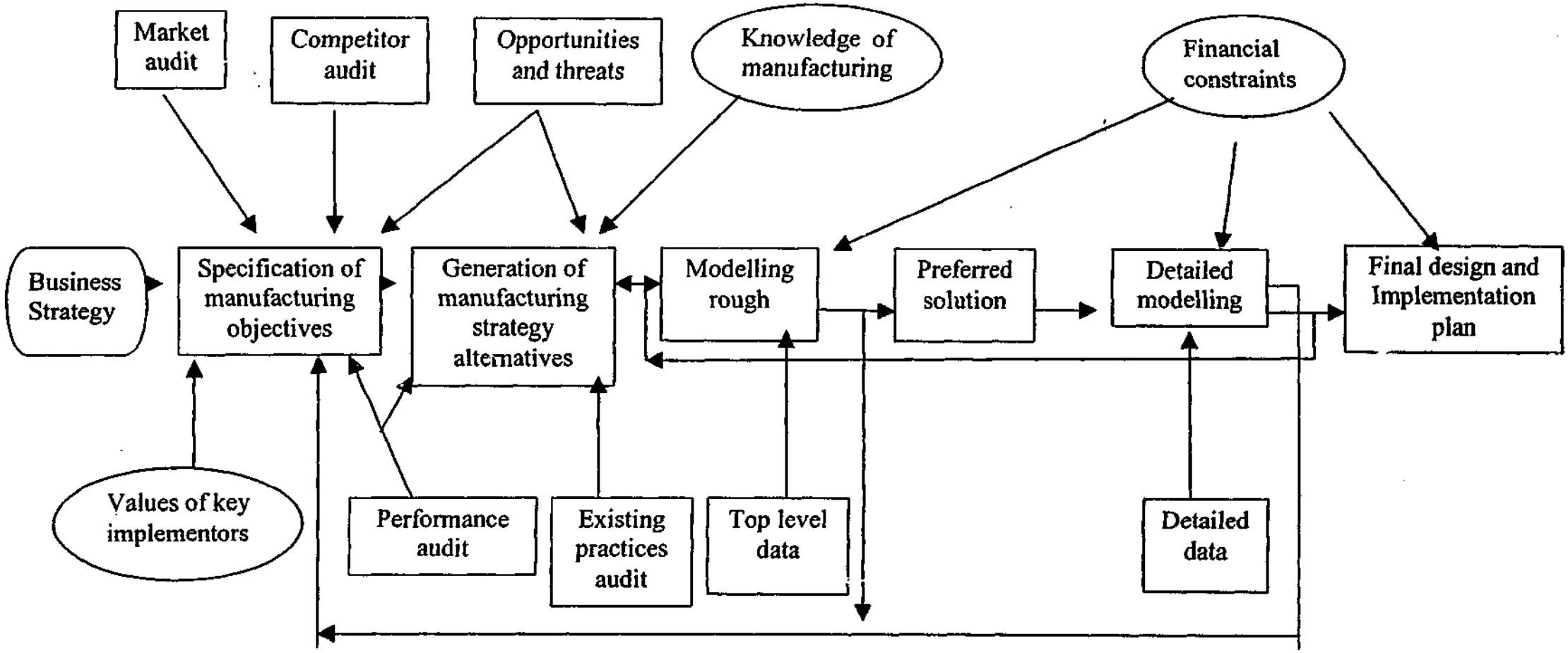


Figure 2.3 Manufacturing Strategy Framework (Platts and Gregory 1990, p.15).

formulation commences by specifying the manufacturing objectives needed to satisfy customers, given knowledge of those criteria which will influence customers to place orders, for a given group of products. The operation measures its present performance on those objectives. It then decides the overall direction in which manufacturing should head, in order to best achieve those objectives. The operation now reviews its current policy settings and specifies alternative policies, which would move it in the required direction. The operation now chooses a preferred solution from the alternatives available and develops an action plan.

The Manufacturing Audit Approach (MAA) is described in detail followed by an analysis of the design of strategic operations planning processes. The MAA is considered more useable and more effective than the other processes reviewed as it covers all the stages required to formulate operations strategy and, to a certain extent, it supports the needs of managers whilst crafting that strategy.

The Manufacturing Audit Approach was developed by Ken Platts and Mike Gregory (Platts 1990, p. 49-66; and Platts and Gregory 1990, p. 6-26). The following explanation covers the model of strategy formulation used, the content of manufacturing strategy, the scope of the process, the detailed process steps and the means of operationalising the process. The model of strategy formulation used broadly is Hofer and Schendl's seven steps (1978, p. 46-47):

Strategy identification:	*Assessment of current strategy.*
Environment analysis:	*Identification of opportunities and threats.*
Resource analysis:	*Assessment of principal skills and resources available to close the gaps identified in next step.*
Gap analysis:	*Comparison of the organisation's objectives, strategy and resource against the environment opportunities and threats to determine the extent of change required in current strategy.*
Strategic alternatives:	*Identification of the options upon which a new strategy may be built.*
Strategy evaluation:	*Evaluation of the strategic options to identify those that best meet the values and objectives of all stakeholders, taking into account the environmental opportunities and threats and the resources available.*
Strategic choice:	*Selection of the options for implementation.*

The Manufacturing Audit Approach generally follows Hofer and Schendel's steps whilst recognising that strategies emerge as well as being deliberately planned (Mintzberg and Quinn 1991, p. 13-14). It is clear from the literature that the process of strategy development is extremely complex and not well understood (Platts and Gregory 1990, p. 6-26). Therefore the MAA, whilst apparently only requiring completion of a series of worksheets, actually incorporates intuitive mental processes undertaken by the participating team members.

In the content of manufacturing strategy, there is general agreement that a supply of detailed information is essential, and agreement on the areas that such information must cover. The eight decision areas which make up a manufacturing strategy and the performance criteria against which manufacturing must be measured are well-recognised (Hayes and Wheelwright 1984, p. 30-1). Objectives derived from the company's business strategy and from customer requirements form further content. It is the prioritising of the criteria and the achievement of a match between manufacturing and marketing for the particular needs of customers that determines how the company will compete. The view is not taken that such content is defined for all companies, rather that it can be individually tailored by companies to their perceived situation.

The scope of the MAA is to formulate objectives, strategies and specific actions for a number of product groups in the functional area of operations. The detailed process steps are defined by the worksheets used in the MAA which are described below.

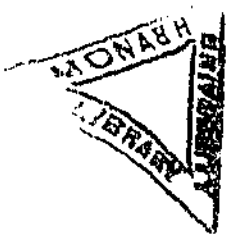
The process is operationalised by gaining entry to an industrial situation, assembling an audit team, managing the project and facilitating the team's task of strategy formulation. An overview of the process is well put by Platts and Gregory (1990, p. 23-4).

> *Rather than act as external "auditors", we have sought to act as "facilitators". Personnel within the company have been intimately involved in the process, our role being to provide the required structure, and to advise and assist when required. We have used multi-disciplinary workshops involving, in addition to manufacturing personnel, representative from marketing, product engineering, finance, personnel, etc. Generally speaking, the representatives have been at*

> *director level and the workshops have been chaired by the managing director. We structured the workshops by using the worksheets as an outline agenda and used them as the basis for discussion aiming to reach a consensus view at the completion of each stage. Between the main workshops there were data gathering activities and mini-workshops usually involving lower levels of management.*

Platts and Gregory developed a set of worksheets which was used by multi-disciplinary teams in six manufacturing companies to generate the manufacturing strategy. These worksheets will now be described as a good example of the support that can be provided for MS formulation.

Worksheet 1 (Profiles of Market and Performance) is used as a graphical illustration of the difference between market requirements and manufacturing performance on a number of criteria. The worksheet is completed by a number of people both from marketing and production and the results overlaid. The existence of differences motivates the team to proceed with the Audit process, as well as providing clues to the areas of strategic concern.



Worksheet 2 (Basic Data about Product Groups) is used to obtain a picture of the company's products arranged in groups, which have implications for manufacturing processes and people and information systems. The sheet structures information on sales, contribution, market share and market growth so that the product groups can be ranked in importance.

Worksheet 3 (Competitive Criteria) is used to identify the most important market requirements in manufacturing terms by product group. The worksheet provides a way of assigning relative importance to these criteria by allocating 100 points across them, per product group, in such a way as to reflect the perceived market requirements. By filling in these worksheets, the team both identifies the gains which strategy could make and specifies the customer objectives which manufacturing needs to meet.

Further worksheets assess the current state of manufacturing and derive the strategies and policies required to improve the fit between manufacturing performance and customer requirements. Worksheet 4 (Existing Performance Audit) measures the current

performance of manufacturing against the criteria identified as important in worksheet 3, for each product group. The performance is summarised by ranking on a scale between –2 ("Performance gives us a strong disadvantage versus our competitors") and +2 ("Performance gives us a strong advantage compared to our competitors").

The MAA uses worksheet 5 (Opportunities and Threats) to identify opportunities and threats to manufacturing in the future because the preceding worksheets concentrate on the firm's current position.

Worksheet 6 (Assess the Current Manufacturing Practices) is used to identify the status of policies in the current manufacturing strategy and to assess how these affected the achievement of the competitive objectives established in the previous stages. The manufacturing operation is broken down into nine manageable policy areas:

- Facilities: The factories, their number, size, location and focus.
- Capacity: The maximum output of the factory.
- Span of process: The degree of vertical integration.
- Processes: The transformation processes (cutting, assembly, etc.) and the way in which they are organised.
- Human resources: All the people-related factors, including those at both the personal and the organisational levels.
- Quality: The means of ensuring that product, processes and people operate to specification using the philosophies of Total Quality Management and Continuous Improvement.
- Control policies: The control policies and philosophies of manufacture.
- Suppliers: The methods of obtaining input materials at the right time, price and quality.
- New product: The mechanisms for coping with new product introduction, including links to design.

Worksheet 7 (Action Worksheet) is used to identify the main manufacturing problems and generate some possible actions to solve those problems.

The Manufacturing Audit Approach is accepted as suitable for future research. It is considered applicable to both the steps required in operations strategy formulation and the support required to complete the process.

Later work by Mills et al. (1998, p. 150-53) argues that the status of policies in the current manufacturing strategy (worksheet 6, above) can be assessed by using events from a strategy chart instead of a worksheet approach. By concentrating on actions, a rich view of strategies may be built (Mills et al. 1998, p. 153). "*Charts concentrate on strategy content but also enable managers to become more aware of how strategy is formed*" (p. 154). Since strategy charts are important to the strategy formulation process, their construction and contribution is more fully discussed here.

Strategy charts are a visual, updateable representation of manufacturing strategy and its relationship with business and corporate strategy (Table 2.4). Strategy charts have two axes, one being time and the other being a strategy hierarchy. Strategy hierarchies are dependent on organisation structure, but in all cases the hierarchy is top down with the bottom three levels labelled 'Manufacturing Objectives', 'Manufacturing Strategy Development', and 'Manufacturing Strategy Implementation'. Above 'Manufacturing Objectives' are the higher strategic levels in the company, such as 'Business Unit Strategy and Objectives' and 'Corporate Strategy and Objectives'. The strategy chart comprises strategy events, which are verifiable decisions and actions in the strategic decision areas that concern the company. The chart is generated by a team involved in strategy development, usually with the help of a facilitator. The use of a number of managers to construct the chart produces debate and reduces the level of errors in the chart. Strategy strands are identified as groups of strategic events within one strategic decision area. Mills et al.'s experience indicates that these charts are capable of aiding the understanding and communication of strategy; identifying current strategy; exploring linkages with business strategy and indicating interactions between strategic decision areas (Mills et al. 1994, p. 235-240).

			Time ➡
Business Strategy & Objectives	Obj: Reduce product costs by 10%	Obj: Reduce customer lead time	
Manufacturing Objectives	Obj: reduce cost	Obj: Stock + lead time reduction	
Manufacturing Strategy Development	Automation ideas, evaluations, capital requests	SMED awareness from articles	
		SMED training developed	
Manufacturing Strategy Implementation	Automations resulting in manpower reductions with increased capacity	Product changeover times radically reduced	Reduce lead times and stock

Table 2.4 Strategy Hierarchy in Strategy Chart. (Mills et al. 1998, p. 152).

Note: 'Obj.' means 'Objective'

Now consider the essential elements required in the design of a process for an operations manager to formulate manufacturing strategy. Through consideration of current approaches to strategy research, Platts makes a case for the process to have external validity so that it can be applied to the 'real world' (Platts 1993, p.5). He considers the implications of this orientation for the process to be:

- *the processes must link to existing frameworks;*
- *there must be adequate empirical testing and verification of any proposed process;*
- *the results of the research must be relevant to the world of the practising manager* (Platts 1993, p.7).

Platts et al. (1998, p.73-78) argue that there are four elements that must be developed in the design of a process: procedure, participation, project management and point of entry. 'Procedure' is the fundamental requirement of a process, it specifies the steps needed to gather and analyse information, identify opportunities for change, provide tools and elicit a written record. 'Participation' means taking part in group activities to engender understanding and commitment, a workshop meeting to collectively agree on objectives and outcomes and a forum which leads to action. 'Project management' means adequate

resourcing, including a managing group, and an agreed time scale. 'Point of entry' means a mechanism for introducing a process into an organisation. This approach to manufacturing strategy process is original and is useful for the present research problem.

2.6 Process Support for Strategic Operations and Logistics Planning

An eminent manufacturing strategy researcher (Skinner 1992, p.13) has stated that formulation of MS is relatively limited. It is argued that this may be due to lack of support for the process of strategic operations planning.

Table 2.3 (see section 2.5.3) lists six types of support for manufacturing strategy formulation and shows the extent to which the eight processes described above provide those types of support. The six types of support are defined as follows, linked to the researchers who have proposed each type of support:

Support for each task – the provision of help in carrying out each task, such as defining the task and providing aids to guide its completion (Platts 1993, p. 8).

Field testing– the extent to which researchers have studied the process of strategy formulation in actual company settings (Adam and Swamidass 1989, p. 199).

External facilitation – whether researchers were present during formulation to observe and guide (Bourne, Mills, Richards, Neely, Platts, Gregory, Barnes, Bicheno, Gill, Hamblin, Rowbotham and Wilcox 1996, p. 6).

Tailored to the company – whether the researchers amend the process to suit closely the needs of the particular company (Bourne et al. 1996, p. 6).

Group consensus – whether a group operating democratically formulates strategy (Bourne et al. 1996, p. 8).

Supply chain involvement – whether other members of the company's supply chain are involved in strategy formulation (Jouffrey and Tarondeau 1992, p. 172).

In summary, existing planning processes provide considerable support for the formulation of strategic operations plans. Key parts of that support are the use of worksheets, to provide structure; and external facilitation, to provide coaching and to encourage autonomy. There is scope for improvement in the steps which the planning team follows, in the involvement of customers in the process and in the extent that the process is tailored to suit particular enterprises. Work on logistics planning will next be reviewed and the case argued for incorporating logistics into operations planning.

2.7 Previous Work in Logistics Strategy and its Relationship to Manufacturing Strategy

There is a distinction between applying the logistics concept to one firm and applying it to all the companies involved in the supply chain. The logistics of the firm is examined first, since this provides the foundation and the limited research into logistics strategy has been carried out in this area. Secondly, the theory of supply chain networks is reviewed since they are important to the present research, even though their strategy is in a preliminary stage.

The logistics channel model found in the literature comprises many vendors supplying materials and components through a materials management system into a manufacturing plant which transforms them into goods and then distributes them via distribution centres to many customers (Bowersox and Closs 1996, p. 100-101). The model incorporates all the storage and transformation processes at nodes in that channel. It also incorporates all the transport movements between nodes and the information flows, from customers, and the production planning which drive each channel area.

The need to link operations and logistics functions is starting to be proclaimed by numerous researchers, following very little emphasis over the last twenty-five years. Skinner (1978, p. 321) stated:

> *The POM* (Production and Operations Management) *faculty is working more closely with logistics and transport faculty. It is natural to combine this with a*

production and inventory control course because a combined course can make a greater contribution.

Suzuki (1998, p. 2-9) recently stated that the inclusion of logistics and sales with production and research and development is essential in the management system of a world-class manufacturing company.

Logistics strategy in such a channel has been developed by several researchers. La Londe and Masters (1994, p. 139) stated:

Implementing integrated logistics management requires that the movement of material throughout the firm be managed in an organic and systemic way. By doing so, the efficiency of the operation could be dramatically improved. Taking the system-wide perspective allows the firm to make appropriate trade-offs between purchasing costs, transportation costs, and inventory and warehousing costs. Close coordination between these operations can produce high levels of service and performance while reducing the total costs incurred.

Fabbe-Costes and Colin (1994, p. 36-50) state that logistics opens new strategic lines of action, provided the function is both proactive and reactive in its response to the firm's overall strategy. They stress the overlap with other functions in the company. After examining a number of companies, they conclude that the formulation of logistics strategies:

is expressed by a combination of strategic moves that can either be linked or can lead the firm to rebound to new actions or finally produce spin-offs that are sometimes unexpected: there can therefore be no 'a priori' rules for the formulation of logistics strategies. (Fabbe-Costes and Colin 1994, p. 50).

Logistics strategy formulation has not developed as far as operations strategy has (La Londe and Masters 1994). It is therefore appropriate to use the generally-agreed manufacturing decision categories and steps (Hayes and Wheelwright 1984, p. 275-78;

Hill 1989, p. 31-36). Strategic work in logistics is considered to be largely from a marketing perspective (Lambert and Stock 1993, p. 39-67).

2.7.1 Integrated Supply Chains and their Strategy Formulation

Next consider supply chains and the limited work available to assist companies to formulate operations and logistics strategy for integrated supply chains.

La Londe and Masters (1994) point out that most products are not totally created by a single firm. If the set of firms, which create flows of materials and goods between raw material producer and end user, is known as an integrated supply chain, then the strategy of applying integrated logistics management to all the elements of a supply chain will be called "integrated supply chain management". La Londe and Masters (1994) make a case that successful logistics strategies must be integrated with production, marketing and total corporate strategy.

Bowersox et al. (1995, p. 277) conclude, from a large international survey, that manufacturers and merchandisers are sufficiently similar to justify the use of one model to obtain capability and competency. They observe the same behaviour in both types of firms and hence conclude that the strategic aim of 'world-class logistics', or supply chain strategy in the present terms, can be achieved by use of the same model for both.

Whilst these authors state that logistics strategy requires co-ordinated planning between all firms in the integrated supply chain, they have not implemented such planning. However, Perry (1997, p.234-236) finds supply chain partnerships to be an essential part of a Quick Response model in the Australian textile, clothing and footwear industry. The most that has been observed is joint planning between several tiers of component suppliers to the automobile industry (Lamming 1989, p.21-32).

Mabert and Venkataramanan (1998, p. 537-541) supply the following definition of a supply chain:

> *Supply chain is the network of facilities and activities that performs the functions of product development, procurement of materials from vendors, the movement of*

> *materials between facilities, the manufacturing of products, the distribution of finished goods to customers, and the after-market support for sustainment* (p. 538).

They then describe the management of that chain as follows (Mabert and Venkataramanan 1998, p. 537):

> *Supply chain management is a central and important area for academic research due to its impact on firms competing in today's global economy. Managing the flow of materials from supply sources to the ultimate customer represents a major challenge for today's managers. To assist managers, the concept of supply chain management has been adopted by many business leaders as an important way to assist in designing, planning and controlling the network of facilities and tasks that comprise the many stages of the supply chain.*

Womack and Jones (1994, p. 93-103) suggest that the management of supply chains should be taken one step further with the formation of a 'lean enterprise'. They define a lean enterprise as 'a group of legally separated but operationally synchronised companies' (p. 93). They envisage such an enterprise achieving an enormous increase in the performance of the supply chain (p. 93):

> *If individual breakthroughs can be linked up and down the value stream that creates, sells and services a family of products, the performance of the whole can be raised to a dramatically higher level.*

More light is thrown upon La Londe and Masters' (1994) and Mabert and Venkataramanan's (1998, p. 537) definitions of supply chains by the following observations. Slack (1991, p.160-64) states:

> *Supply networks can be viewed at three levels. Stand far enough back and any operation is a small part of a total network. But within the total network, and of more immediate concern to the operation, is its immediate network of customer/supplier relationships, where the operation is both a supplier to some and a customer to others. Finally within the operation itself is an internal network -*

> *flows of materials and information between departments, cells or sections of the operation.*

Cooper, Ellram, Gardner and Hanks (1997, p. 72) define channel integrator as an approach in which a company works with its first and second tier suppliers and its first and second tier customers. They then state:

> *The channel integrator is an approach where one party, a channel leader, plays the key role in steering the overall strategy for the channel and in getting channel members involved in and committed to the channel strategy* (Cooper et al. 1997, p. 72).

In addition, Cooper et al. (1997, p. 79-81) make a case for an integrated supply chain to be considered as a 'Value Tree.' If a company is the trunk of the tree, then it is typically involved with multiple suppliers above (the branches of the tree) and multiple customers below (the roots of the tree). 'Value' refers to Porter's (1985, chaps. 2 and 7) value chain concept of functional value added. Cooper et al. then state:

> *The firm should discriminate among the branches above* (in the Value Tree) *to build tailored styles of relationships with a large number of branches at varying levels. These relationships should be tailored to provide specific advantages to the participating organisations, should assist in maximising the value adding activities of the firm, and should ensure the sustainable nature of the resultant advantage* (Cooper et al. 1997, p. 79).

Given the purpose and structure of an integrated supply chain, now consider the types of strategic decisions required to manage the chain. The strategic decisions in operations and logistics are considered to be policy decisions (or patterns of actions) to achieve customer criteria for order placement. The following customer criteria are described by Hill (1989, p. 32-35) for manufacturing strategy:

- Price
- Quality
- Delivery Speed and Reliability

- Flexibility (demand increases)
- Features (product range)
- Design leadership
- Technical support

These manufacturing criteria are not significantly changed for supply chain planning (Slack 1991, p. 166-168) since the overall purpose of the supply chain in serving customers is the same as that of the manufacturer of products for the same ultimate customers.

The types of policy decisions in a supply chain are also relatively similar to those used by Hayes and Wheelwright (1984 p. 33-37), Hill (1989, p. 33) and Platts and Gregory (1990, p. 22-23) for manufacturing companies. Table 2.5 compares Platts and Gregory's policies (1990, p. 22-23) with those used in a major survey of 'World Class Logistics' (Bowersox et al., 1995, p. 389).

To a greater extent than manufacturing operations, integrated supply chains are dependent upon the information which flows between chain partners to plan and effect the flows of materials and products (Lewis and Talalayevsky 1997, p. 142-145). These authors state that information distribution is so important to supply chains that it should have its own structure, linking all producers, intermediaries and retailers, in order to optimise information flows serving these partners (Lewis and Talalayevsky 1997, p. 146-153).

The coordination between supply chain operations and marketing (Lambert and Stock 1993, p. 724-726) is very important to successful strategic planning, as has been established for operations (refer section 2.2.5).

Policy Areas	
Platts and Gregory	*Global Logistics Research Team*
Facilities	Facilities Design Capital equipment procurement
Capacity	Production Planning
Span of Process	Data processing for distributed applications Customer Service
Processes	Materials Handling Intra-company Transportation Finished Goods Warehousing
Human Resources	
Quality	
Control Policies	Logistics Administration Sales Forecasting Order Processing Inventory Management
Suppliers	Sourcing/ Purchasing Raw Materials Inbound Transportation
New Product	
No equivalent area	Outbound Transportation International Logistics

Table 2.5 Comparison between manufacturing and supply chain policy areas

The process requirements for strategy formulation for integrated supply chains rest on those already reviewed for operations strategy (section 2.5 and 2.6). There has been some research into partnering between two supply chain members (Lambert et al. 1999, p. 165-181) which found, in the context of logistics partnerships between a major company and its third-party service provider, the following:

> *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.(Lambert et al. 1999, p. 174).

However the work cited as the most developed in logistics or supply chain planning (Fabbe-Costes and Colin 1994, p. 36-50) does not contain any reference to the processes required or the supports that could be provided to increase the chance of successful formulation.

This review shows the evolution of logistics management from part of marketing in a particular company, through integration with operations in that company, to common approaches to channel design and flow of materials and products by all member companies in an integrated supply chain. Accepting this evolution of logistics management implies the need for a similar evolution of strategy derivation.

2.8 Planning in the Australian Meat Processing Industry

The importance of the meat processing industry to Australia is discussed in section 1.3.

Planning represents the long-term direction of the organisation in order to fit itself to its market and industrial environment. Investigations have found (Andrewartha et al. 1996, p. 34-35) that formal planning is rare in meatworks. Meatworks tend to continue without change except when compelled by strong market or supply chain forces. So much management effort is put into the areas of organising and controlling that little energy is left for strategic planning (Andrewartha et al. 1996).

There is no evidence that formal operations strategy exists in Australian meatworks. A brief 'Meat Industry Strategic Plan' document (Meat Industry Council 1995) referred to 'improved management' as one of six industry goals but it did not identify operations or logistics as functions requiring their own strategies. Corporate or business plans of meat processing companies (such as Wilson, one of the companies used in the current research, refer section 6.2) give commercial details and profitability for funding purposes but do not develop plans for functional areas.

This lack of operations and logistics planning is considered a continuation from the previous business situation rather than a well-thought-out response to current domestic and export markets. The increased competitiveness in such markets is believed to underpin the need for meatworks to formulate their own operations and supply chain plans for future business success.

2.9 Conclusions on Existing Strategic Operations and Logistics Planning

The overall aim of this research is to improve the competitive stance of companies through strategic planning and enhanced execution of operations and logistics functions.

The literature review has demonstrated that companies require functional strategies to achieve business aims. This applies especially in operations and logistics to ensure that their considerable resources are effectively focussed on satisfying customers' needs.

Previous work on crafting manufacturing strategy has concentrated on the *content* of strategy. However, it is clear that the *process* is very important, since a good process increases the likelihood of a good resultant strategy. Operations planning *process* has been shown to comprise the steps required to formulate operations strategy and support for the managers carrying out those steps. The review finds a well-developed set of steps but limited research, and no agreement, on how managers should be supported.

The Manufacturing Audit Approach (Platts and Gregory 1990, p. 6-26) is considered the most advanced process in supporting strategy formulation. This work will therefore take the MAA, find out what modifications are required in Australia and implement it in Australian Meatworks.

Previous work on logistics strategy recognised the need for a functional strategy but development was limited compared to the processes derived for manufacturing strategy.

Australian meatworks are shown to be important and their management faces a number of challenging problems. This research responds by tailoring the Strategic Operations and Logistics Planning (SOLP) process for meatworks and applying it in four instances.

Strategic planning has not been found to exist at functional levels in the Australian meat industry. Yet there would appear to be a requirement to plan operations and logistics functions together in meatworks because of the integrated responsibility for meat grade and volume from graziers through meat processors to retail outlets. In response to this demonstrated need, logistics areas for manufacturing companies and their supply chain partners were added to SOLP.

Hence, the research hypotheses will investigate the ability of a tailored SOLP process to assist operations managers to craft effective strategies. This research aims to substantiate that this SOLP application *improves* the strategic decision-making performance, at a functional level, of the meatworks managers involved. The following hypotheses investigate areas which are not answered by the existing literature:

H1 The SOLP process can be applied effectively to the meat processing industry, which has some significant differences from other manufacturing industry.

H2 The SOLP process is operationalised for manufacturing companies, because barriers to success have been removed.

H3 An extended MAA process (SOLP) effectively links operations and logistics into a complete functional strategy.

H4 The SOLP process contributes to improved strategic decision-making by improving strategic actions of the managers involved.

H5 Action Research provides an approach which engenders an effective SOLP process.

2.10 Research Methods

This section reviews the research methods considered appropriate to strategy formulation, its support and its effectiveness in improving competitive performance.

2.10.1 Spectrum of Research Methods

Strategy process research cannot be carried out at arm's length from the firm (Chakravarthy and Doz 1992, p. 6) because the fundamental questions being addressed,

such as the relationship between its decision processes and its competitive position, require studies from within. Chakravarthy and Doz state (1992, p. 6):

> *Strategy process research needs a range of more intrusive methods including questionnaire surveys, field studies, and action research.*

Researchers have used survey methods to test the effectiveness of strategic management (Ansoff 1984, p. 188-95) but these have given inconclusive results (Mintzberg, 1994, p. 91-97).

Positivistic science is not useful "*for generating knowledge for use in solving problems that members of organisations face*" (Susman and Evered 1978, p. 583). In this, positivistic science means "*all approaches to science that consider scientific knowledge to be obtainable only from sense data that can be directly experienced and verified between independent observers*" (p. 583). Susman and Evered point out that positivistic science rests on a philosophical conception of the world which exists as a unified and causally-ordered system. The system's structure can be inferred from empirical observation and its data can be logically reconstructed into laws, which apply, regardless of the meanings humans may give to them (p. 583-4). They argue that this world view is inadequate for generating knowledge about organisations because the latter obey laws that are affected by human purposes and actions and they are systems of human action in which the means and ends are guided by values (p. 584).

Action Research is a suitable research method because it allows the researcher close contact with the team carrying out strategy formulation. This is supported by Susman and Evered (1978, p. 586) who state that:

> *Action research is a mode of enquiry more congenial to the [characterised] perspective on organisations and avoids the deficiencies of positivistic science for generating knowledge for application to organisational problems.*

2.10.2 Action Research

A frequently quoted definition of Action Research is that by Rapoport (1970, p. 499):

> *Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework.*

Rapoport's definition was extended by Foster (1972, p. 529-556) to identify that Action Research's aims should be sought through the process of changing the problem situation itself:

> *a type of applied social research differing from other varieties in the immediacy of the researcher's involvement in the action process and the intention of the parties, although with different roles, to be involved in a change process of the system itself. It aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable framework.*

Susman and Evered (1978, p. 588) give a useful process-oriented definition:

> *Action research can be viewed as a cyclical process with five phases: diagnosing, action planning, action taking, evaluating, and specifying learning.*

This cycle is meaningfully explained by Checkland (1991, p. 1-7):

> *Initially the researcher will select a real-world situation as being potentially relevant to research themes significant to him or her. Then it is important and prudent carefully to negotiate the respective roles of the researcher and the people in the problem situation. Next, from a research point of view, it is essential to declare the framework of ideas and the methodology in which they are embodied.*
>
> *Substantive work can now begin, consisting of the involvement of the researcher in the unfolding situation with a view to helping bring about changes deemed 'improvements'. While doing this, the researcher tries to make sense of accumulated experience, doing so by means of the declared framework and methodology. This may cause a rethinking of earlier stages. Finally, the researcher exits from the situation (which is essentially an arbitrary act since human*

> *situations continue to evolve through time) and reviews the experience in order to extract the various kinds of lesson.*

Perry and Coote (1994, p.17) state that action research is the most useful methodology for management development:

> (For management development) *the most useful methodologies are the most inductive ones of action research and convergent interviewing. Not far behind them is the case study methodology.*

The research situation requires collaboration between the researcher and a team of company managers to formulate an operations strategy. Action Research allows the researcher to observe at first hand interaction between managers during meetings. It allows the researcher to get to know all the players over an extended period. Yet, it does not involve the researcher in responsibility for the day-to-day business or plans of the company. It is difficult to envisage any other methodology that would provide such a rich picture of the strategy formulation process. Other methods, such as interviewing managers after the event or getting them to speak about the process at a conference, fall down on this criterion.

Action Research is supported because it gives easier access to firms (Maslen and Lewis 1994, p. 3). Experience of researchers shows that businesses are frequently keen to use Action Research so that access to the formulation process is not difficult. Action research is a very practical way in which researchers can aid business. Hence, its advantage as a research technique is that it transfers knowledge, gained through research, into the subject company.

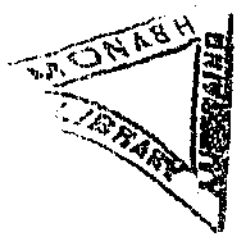
The price paid for Action Research is the investment of time and energy by the researcher. He/she has a lot of work to do, much of it in support of the company's operations plan rather than directly on his/her own research. Hence, for a given amount of research effort, fewer field applications can be carried out.

Having considered Action Research in general, due emphasis must be given to Platts' (1990, p. 35) use of Action Research in the Manufacturing Audit Approach:

> *This stage of the research (testing the audit approach) set out actively to apply the process which had been developed in stage one both to test it and to develop and refine it in practical situations. As this involved the testing of an approach which prescribed a process different to that which the organisation would normally use, action research was clearly an appropriate method.*

Other researchers who have been particularly involved in the *process* of manufacturing strategy are discussed earlier in this chapter and listed in Table 2.3. Marucheck et al. (1992, p. 89-120) are the only researchers in this group who did not carry out any fieldwork during MS formulation. Fine and Hax (1985, p. 28-46) and Jouffrey and Tarondeau (1992, p. 167-186) both carried out fieldwork but they do not give details of their process method. Three research studies (Menda and Dilts 1997, p 227-35; Miller 1988, p 163-180; and Voss 1992, p 121-132) used both interviews and group discussions, of various kinds.

Platts and Gregory were successful in their research (1990, p. 24) and their work supports the most prevalent methods of other relevant researchers. Hence, Action Research is concluded to be the best method available to assist managers to formulate operations strategy.



2.10.3 Detailed Instruments

The efficacy of several detailed instruments used in the present research, according to the literature available, is briefly reviewed. The instruments are observations, case research and structured interviews.

Case research methods are valuable particularly when the research hypotheses aim to explain 'how?' or 'why?' a theory works (Yin 1989, p.17). He states:

> *As a research endeavour, the case study contributes uniquely to our knowledge of individual, organisational, social and political phenomena. Not surprisingly, the case study has been a common research strategy in psychology, sociology, political science and planning. In all of these situations, the distinctive need for case studies*

> *arises out of the desire to understand complex social phenomena. In brief, the case study allows an investigation to retain the holistic and meaningful characteristics of real-life events – such as organisational and managerial processes.*

Yin (1989, p. 17) goes on to state that the case study method is appropriate when the research hypotheses aim to explain theory; when there is no control over behavioural events; and when the research focuses on contemporary events. All of these conditions apply in the process of MS formulation.

Yin (1989, p. 21) considers that case studies are useful in building theory:

> *Case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes. The investigator's goal is to expand and generalise theories and not to enumerate frequencies.*

The value of case research to this thesis is that it allows the researcher to test whether a proposition is supported in an industrial situation. The researcher can then investigate whether replication of the supported proposition can be achieved in further situations. Yin (1994, p. 13) defines a case study:

> [As] an empirical enquiry that:
>
> - investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident;
> - copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result
> - relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result
> - benefits from the prior development of theoretical propositions to guide data collection and analysis.

Case study research is a useful method since the research hypotheses are explanatory and exploratory. Case study research fits the present research because each company application is a well-defined process, from the team's first meeting until it has finished a set of action plans for the development of its manufacturing system. Explanatory research

is carried out to '*support, expand or raise doubts about existing theories*' (McCutcheon and Meredith 1993, p. 241). Exploratory research is conducted to crystallise a problem and identify information needs with the expectation that subsequent research will be needed to provide conclusive evidence (Zikmund 1994, p. 33). An example of exploratory research is a longitudinal case study which investigated the difference between service and manufacturing operations when carrying out process re-engineering (Narasimhan and Jayaram 1998, p. 7-10).

A further instrument, which can be used to collect the views of team members, is the structured interview. In the latter, the interviewer presents the respondent with a printed set of questions that include both closed and open-ended questions. The interviewer notes answers to the closed questions but also gathers responses to wider views and perceptions. Platts (1990, p. 39) used such interviews and he states:

> *At a subjective level, the users were interviewed to establish their reactions to the process. The interviewing sought to establish success by both direct and indirect questioning where answers could be cross-checked. Direct questions asked specifically about the usefulness of the process, indirect questions addressed specific issues (eg the workshop procedures) and asked for suggestions for improvements. In this way, information was gathered which could be used both to improve the process and to infer its usefulness. The interview structure was very loose allowing the interviewees freedom to comment on any aspect of the process: this seemed most likely to promote frank views.*

Zikmund (1994, p. 324-5) states that open-ended response questions, which pose a topic and ask the respondent to reply in his or her own words, are most beneficial when the researcher is conducting exploratory research. Potential disadvantages of such questions are the additional cost of coding responses and the possibility of interviewer bias. It is concluded that the benefit of getting first-hand opinions of the managers formulating the strategy outweighs the dangers of gathering subjective views and interviewer bias.

Chapter 3 describes the Research Methodology used to gain information about these questions. The procedures and results are analysed in subsequent chapters.

CHAPTER THREE

RESEARCH METHODOLOGY

"I like to think of research as the distance we must travel between the problem and the answer. I have seen this distance travelled many times against many obstacles- both natural and man-made – which, at the time, seemed unsurmountable." (Samoff, 1891-1971).

3.1 Overview of Research Design

This chapter describes and justifies the research methodologies used in this thesis to investigate the process of Strategic Operations and Logistics Planning (SOLP) in meat processing companies. The main methodology and subsidiary research instruments are described in context, including their advantages and disadvantages.

The main methodology used is Action Research (AR) in which a researcher is involved in a real-world situation for a period of time. This close involvement provides experiences and observations from which to draw various lessons. It is possible to distinguish between the AR project and the thesis project (Perry and Coote 1994, p. 2). The AR project comprises the application of Strategic Operations and Logistics Planning in a series of workshops in a number of firms. After AR has set up a suitable field situation, the thesis project comprises the data about a number of propositions used to support or deny the research hypotheses addressed. Such data was collected during the SOLP workshops and in interviews with the participants.

Within the Action Research, two other data collection methods are used to provide specific data about the project. Case analysis is used to determine the extent to which support for research propositions can be obtained from the applications of SOLP. Structured interviews are used to obtain the views of the individual team members to determine whether they support or deny the research propositions.

A key part of the research design is to plan both operations and logistics channels together. There is strong theoretical evidence that planning entire supply chains together can make major competitive gains, yet research has separated logistics planning from manufacturing strategy. Generally industry has maintained the same separation. This separation of two essentially coherent functions may be a further reason for the reluctance of manufacturers to formulate strategic operations plans. Carrying out such joint planning in a field situation provides an opportunity to observe whether there are gains in practice.

Stages in the research design adopted to support SOLP formulation and extend the process to the supply chain are shown in Figure 3.1. A literature review was carried out to define the research problem in relation to available knowledge and its boundaries. From the review, the Manufacturing Audit Approach (Platts and Gregory 1990) was identified as providing the most promising support for manufacturing strategy formulation. The MAA process was adopted as an initial model and, using Action Research, it was tested in two Australian companies in the first phase of the research.

The information gained in this application allowed an improved process, known as Strategic Operations and Logistics Planning, to be designed in the second research phase. The design took account of the intended use of the process in the Australian meat industry. Running the SOLP process was not, by itself, likely to provide sufficient evidence to answer the research hypotheses. A series of propositions (Refer Table 3.1) was therefore constructed, which would link the research hypotheses to field observations in the second step of Phase 2. The field observations would support, or deny, the research hypotheses.

The SOLP process was next applied in two Victorian meatworks in Phase 3. An Action Research approach was used to assist each management team to formulate a number of operations strategies. This field situation was then studied to determine what effects, if any, the process had on each individual team member's understanding of Strategic Operations and Logistics Planning. In addition to observing the formulation process, the researcher decided to interview each team member before and after the SOLP process.

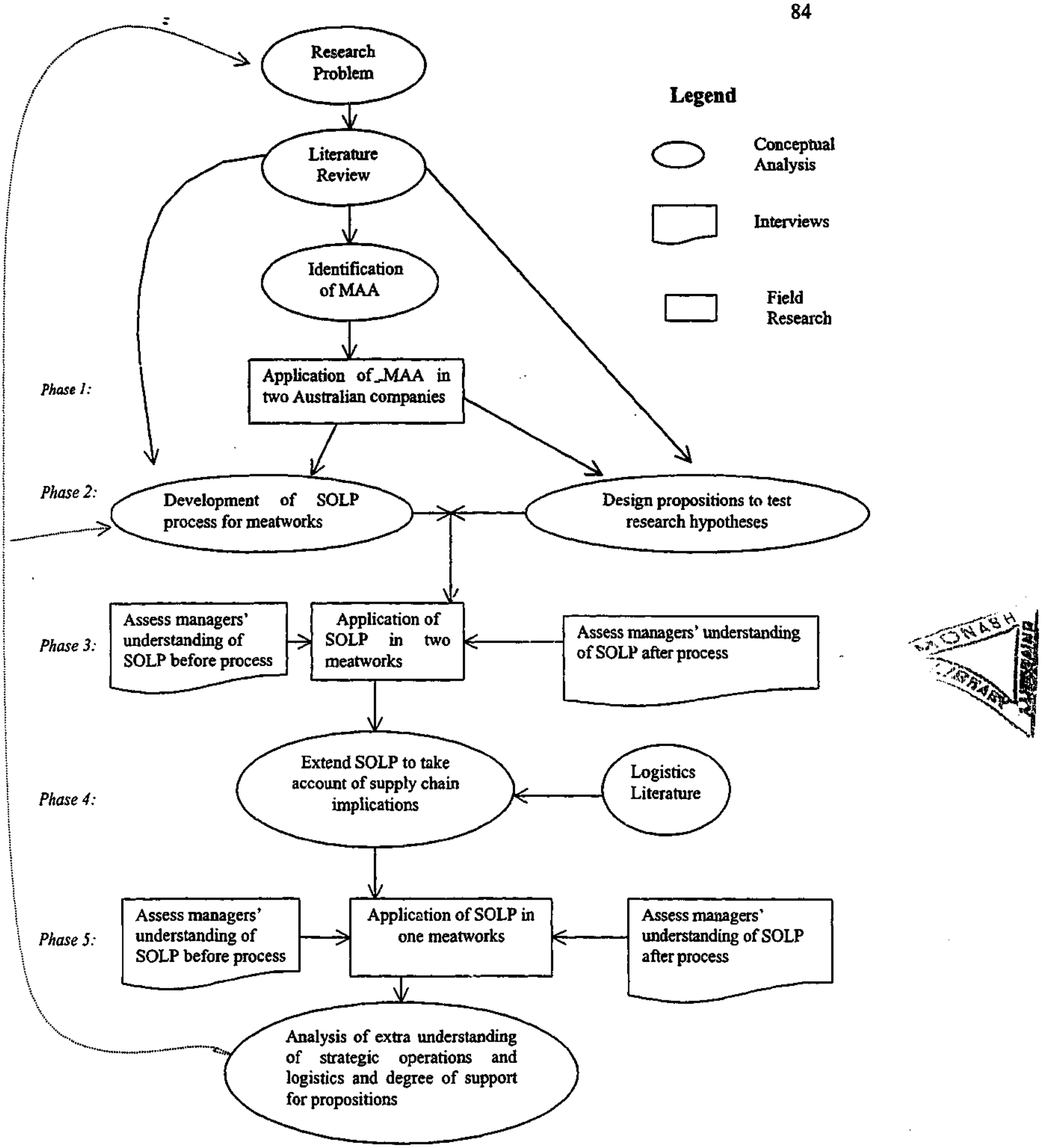


Figure 3.1 Research Design

Pr1 Effective SOLP contributes to improved strategic decisions and actions, at business or operating levels.
Pr2 Improved management performance is indicated by managers' own views and by attainment of operational milestones on the way to improved business performance.
Pr3 Implementing SOLP leads to observable end results.
Pr4 Formulation of a strategic plan requires an external facilitator.
Pr5 The method of strategy formulation covers all required parts (i.e. there is nothing missing).
Pr6 Ability to use strategic concepts in their day-to-day decision-making requires managers to be informed and to be motivated to pull in the same direction.
Pr7 Possession of a formal SOLP is one indicator of successful formulation of operations/ logistics strategy.
Pr8 SOLP produces a complete functional strategy, which combines operations and logistics.
Pr9 Preparation of a strategic plan is not an end in itself: it is a step on the road to strategic operations management.
Pr10 SOLP leads to advantage over competitors through improved operations performance.
Pr11 Managers need to have an orientation towards the future to take strategic initiatives.
Pr12 Operations/ logistics strategy must be communicated throughout management (often expressed as throughout the organisation) in order to make a difference in performance.

Table 3.1 Propositions

Structured interviews were used to gauge this degree of understanding of members and the success of the SOLP process from the point of view of each member. The interview questions were designed to obtain information about the above propositions. Two senior members of each team were also interviewed two years after the process to collect data about the research propositions.

So far the research had concentrated on operations and logistics strategy internal to the companies. In Phase 4, the SOLP process was extended to allow for the postulated need to plan the operations of all parts of the supply chain at the same time.

The final field research phase, Phase 5, applied the extended SOLP process in one meatworks. This phase was similar in method to the two previous meatworks applications. Team members were interviewed before and after the SOLP process to find out their attitude to supply chain planning, as well as their degree of understanding of the

SOLP process. Due to its successful reception, the process was carried out twice in this meatworks. Two senior team members were also interviewed some time after the process to collect data about the research propositions.

3.2 Research Methodology and Instruments

This section describes the research methodology and instruments used and justifies their choice.

3.2.1 Action Research

Paraphrasing the words of Checkland (1991 p. 1-7), Action Research involves the researcher selecting a real-world company situation relevant to the research themes. After negotiating the respective roles of researcher and participants, he or she is involved in the unfolding problem situation to bring about improvements to the company. The researcher tries to make sense of the situation whilst it is happening and, after leaving the situation, he or she reviews the experience to extract lessons relevant to his or her research.

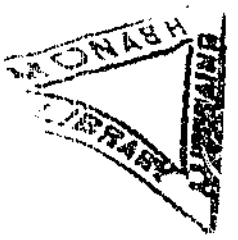
Action Research required the researcher to be involved in the strategy formulation as a facilitator. This meant that he was part of the change process and assisted in achieving the aims of the team members, although his role was different to theirs. The objective was that the collaboration of researcher with team members would assist in resolving a company problem, the lack of a strategic operations and logistics plan.

The Action Research used a process of SOLP in which company managers define the direction and strategic options required by their operations and logistics functions. The team of managers meet together on a regular basis to construct the strategic plan. The researcher is present at each meeting, acting as facilitator and educator in the planning process. The managers retain full responsibility for the resultant plan. The researcher is able to observe at first hand interaction between managers during the meetings. His presence is natural, not forced, because of his role as a facilitator.

Action Research is preferred to other methods because it allows close contact with strategy formulation in a natural way. It allows the researcher to get to know all the

players over an extended period. Yet it does not involve the researcher in responsibility for the day-to-day business or plans of the company. It is difficult to envisage any other methodology which would provide such a rich picture of the strategy formulation process. Other methods, such as interviewing managers after the event or getting them to speak about the process at a conference, fall down on this criterion. AR is also suitable for the present research because it gives easier entry into firms and it transfers knowledge, gained through research, into the subject company. AR requires a large investment of time and energy by the researcher but this investment is considered worthwhile to obtain access to active strategy formulation.

Action Research was chosen because it allows the researcher close contact with the team carrying out strategy formulation. Review of the literature shows that most previous work has given little or no support to managers in strategy formulation. Skinner (1992, p. 13) points to the low rate of adoption of manufacturing strategy formulation. Therefore it would seem extremely important to be present at the formulation stage to encourage and assist managers in the process.



3.2.2 Case Research

Case research was chosen as one of the two methods of data collection because it allows the researcher to test whether a proposition is supported in an industrial situation and then to investigate whether replication of the supported proposition can be achieved in further situations.

The case study, in this research, is defined as an empirical enquiry which investigates a current phenomenon within its actual context. The case has unclear boundaries between phenomenon and context. It has a large number of variables of interest compared to the number of cases. It uses theoretical propositions, developed in advance, to guide data collection and analysis (Adapted from Yin 1994, p. 13).

McCutcheon and Meredith (1993, p. 239-256) recommend greater use of case study research in operations management to close the gap "between operations management

research's prescriptive advice and workable answers for managers" (p. 239). They see several uses for case research in operations management:

> *Case research methodology is just one of many empirical approaches that aim to develop our understanding of "real world" events. Typically investigating ongoing business operations does not allow conditions to be controlled. The researcher must therefore study the phenomena by noting the states, in each case, of all the conditions that might affect outcomes. Case study research is often used for developing new theories or for examining unfamiliar situations. Case studies may also be used to support, expand or raise doubts about existing theories.* (McCutcheon and Meredith 1993, p. 240-241)

They set down the basic procedure for conducting case studies:

> *The case study researcher observes, first hand if possible, the events surrounding a situation. The researcher may also try to develop an understanding of the mechanisms involved. The researcher may gather information through a number of other means, primarily interviews of key individuals – the managers, workers or technical staff involved. Given enough background theory, a standardised survey might also be conducted within the case organisation. An important source of information is the setting itself. Properly carrying out a case study requires clearly stated goals and theoretical bases, a protocol for information gathering, carefully selected research sites, and the trust and co-operation of those to be studied.* (McCutcheon and Meredith 1993, p. 242-243)

Some of the authors who have used case study methods in exploratory research in operations management are now examined. Buxey (1988, p. 447-455) used a case study perspective to examine production planning under seasonal demand. Finch and Cox (1986, p. 329-342) used exploratory case research to examine the use of Just-In-Time management by small manufacturers. Howson and Dale (1991, p. 71-82) examined the purchasing function of a company by case study research. A particularly relevant study in

service operations is a longitudinal case study (Narasimhan and Jayaram 1998, p. 7-22) which investigated the difference between service and manufacturing operations when carrying out business process re-engineering (BPR). The case study generated a number of propositions which enabled the researchers to build a process model for planning and implementing BPR projects. All these studies demonstrate the successful use of the case study method in exploratory research comparable with the present research.

Each application of SOLP is treated as a case study. Information gathered during the SOLP process and from interviews is used to support or deny theoretical propositions, which in turn support or deny the research hypotheses.

Case study research is considered to be an appropriate instrument to use, since the research hypotheses are exploratory and explanatory. Case study research is advantageous when questions are being asked about a contemporary set of events over which the investigator has little or no control (Yin 1989, p.20).

Case study research fits the present research because each company application is a well-defined process, from the team's first meeting until it has finished a set of Action Plans for the manufacture of its products. Case study research was therefore chosen as one method of obtaining support for the research hypotheses.

3.2.3 Structured Interviews

Research hypothesis 4 states: 'The SOLP process contributes to improved strategic decision-making by improving the strategic actions of the managers involved' (section 1.6). Since decision-making cannot be measured from normal methods of reporting, there would seem to be three methods of measuring it:

- by direct observation of the managers at work over an extended period of time,
- by asking them to keep a diary of all decisions made, and
- by asking their views on a number of decision matters which would indicate their performance.

The first of these was not possible: neither research resources nor access was available, although observation of the managers during the planning process gave some insight. The

second could not be done because the managers were far too busy to agree to such extra work. Hence the third, feedback on managers' views through structured interviews, was the main method chosen.

Each team member was interviewed by the researcher twice: once before and once after the SOLP process. An example of the questions posed to members is provided in Appendix 2. The first eleven questions were asked before the planning took place and the whole eighteen questions were asked after the completion of the process. In addition, two senior managers or directors at each meatworks were interviewed some time (at least six months) after the process was completed. These interviews used a set of questions framed to obtain their views on the research propositions (refer section 3.4.3 below). Appendix 5 gives a full list of these questions.

The advantage of such interviews lies in the confidential, one-on-one contact which permits the respondent the time in which to reflect on his/her actions. A further advantage is the multiple sources of data for each SOLP process.

The disadvantage of interviews lies in the reliance on judgment and openness on the part of the respondent. Inevitably answers given are somewhat subjective. However the respondent has little to gain by disguising the true state of affairs. Also the researcher has gained a close acquaintance with the respondents over many meetings. This is believed to render open responses more likely than with an unknown interviewer. Further, the climate in the interviews was supportive and relaxed.

3.3 Initial Manufacturing Strategy Process Model: The Manufacturing Audit Approach

This section explains the initial process model assumed for the present work, the Manufacturing Audit Approach, which is described in section 2.5.4. The MAA uses Hofer and Schendel's (1978, p. 46-47) model of strategy formulation, although the task of strategy formulation is considered to be extremely complex (Platts and Gregory 1990). Therefore the MAA, whilst entirely prescriptive, when taken literally as filling in a series

of worksheets, incorporates descriptive and intuitive reasoning, if viewed as the mental processes undergone by the participating team members.

Strategy content comprises the eight decision areas, prescribed by Hayes and Wheelwright (1984, p 30-31), driven by the company's business strategy and by customer requirements. The view is taken that content can be individually tailored by companies to their perceived situation.

The scope of the MAA is to formulate objectives, strategies and specific actions for a number of product groups in the functional areas of operations and logistics.

The detailed process steps are mainly defined by the worksheets given in Table 3.2, which differ slightly from those used in the MAA (refer section 2.5.4). Briefly they involve product profiling, market share data, order winning criteria, current operations performance, existing operations strategies and an action plan by policy areas. The Manufacturing Audit Approach's Worksheet 5, 'External Opportunities and Threats' is excluded because it was found, in Phase 1, to lead team members to consider opportunities and threats which apply to the business rather than to the operations and logistics functions. Worksheet 8 is added because a time-phased list of actions was required, in Phase 1, to ensure teams had enough information to enable implementation.

The process is made operational by gaining entry to an industrial situation, assembling an audit team, managing the project and facilitating the team's task of strategy formulation.

Worksheet	Subject
1.1	Profile - Market Requirements
1.2	Profile - Achieved Performance
2	Market Share by Product Group
3	Order Winning Criteria
4	Current Operations Performance
6	Current Operations Strategy
7	Strategy Derivation
8	Action Plan

Table 3.2 Worksheets used in SOLP

3.4 Phases of Research

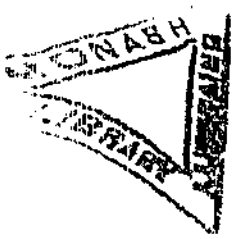
This section builds on the Overview of Research Design to explain how each phase of research was organised.

3.4.1 Phase 1: Assess value of MAA in two Australian companies

The first phase of the research involved using the Manufacturing Audit Approach (Platts and Gregory, 1990) with two Australian companies. There were two main aims of this phase:

1. To understand how the MAA is carried out in practice.
2. To assess what changes were required to fit the MAA for use in Australian companies.

Two very different companies were used. The first, Trico Australia, is a manufacturer of windscreen wiper assemblies for cars. The second is the engineering workshops of an emergency services provider in Melbourne, Australia. The reasons that these companies were chosen are explained below. Arrangements were made with the Operations Director of the first organisation and the Engineering Manager of the second organisation to carry out the MAA.



3.4.1.1 Trico Australia

The first company, Trico Australia, is a Melbourne-based manufacturer of windscreen wiper components and assemblies (Samson 1991, p. 450-468). It is the leading supplier to the Australian car manufacturers and a significant exporter. Trico has a turnover of $A 37 million and employs 240 people. Trico was chosen because it was known to have developed its manufacturing and constructed informal manufacturing strategies over a period of time. The company implemented Just-In-Time in the mid-1980s and has consequently achieved a fourfold increase in stock turns, press set-up time reduced from seven hours to fifteen minutes and production batch sizes reduced from eight weeks to one week (Boyles 1991, p. 129-34; Sohal 1996, p. 91-102). The work force regularly

designs incremental improvements to manufacturing operations. Export has grown over the last ten years from 5% to 40% of turnover.

The initial contact at Trico was the Operations Director who had been involved with a Manufacturing Round-table run by Monash University. At a preliminary meeting with the Operations Director, the researcher presented the audit approach and explained the work involved in preparing a manufacturing strategy. Potential benefits for Trico resulting from this industry-academia collaboration were discussed, and the Operations Director in consultation with the Managing Director accepted the research project. Dates for a series of two-hour, weekly meetings were arranged. The initial senior management team comprised two directors and two managers. This was increased by a further three managers at the first team meeting. The researcher acted as a facilitator to the team.

The research comprised the completion of nine worksheets (refer Table 3.3), taken from Platts and Gregory (1990), by the Trico management team. Worksheet 8 was added to ensure that a list of actions against a time scale was derived. A set of questions was developed to test the reaction of the managers to each worksheet and the overall process (Refer Appendix 1). The questions and a set of instructions for completing the sheet were printed on the back of each worksheet. A set of worksheets with examples was prepared to help managers understand the information required. An 'other' category was added to all relevant worksheets to prevent the headings being restrictive.

Work sheet	Title	Work sheet	Title
1.1	Profile- Market Requirements	5	External Opportunities & Threats
1.2	Profile- Achieved Performance	6	Assess Manufacturing Strategy
2	Product Family Market Data	7	Strategy Derivation
3	Competitive Criteria	8	Action Plan
4	Current Operations Performance		

Table 3.3 Worksheets used in the Trico Audit

Strategic operations plans were formulated in this way for four different product families.

Details of the planning process at Trico are given in Chapter Four.

3.4.1.2 Engineering Workshops

The second organisation, the Engineering Workshops of the Melbourne Metropolitan Fire Brigade, has the task of maintaining and repairing all the vehicles used by fire teams. It had an annual expenditure of several million dollars and employed about 70 people. Engineering Workshops was chosen because it presented a very different situation to Trico Australia, which would test the MAA thoroughly. Differences comprised the service operations situation, public ownership and responsibility to internal customers.

The fleet of vehicles maintained by Engineering Workshops to respond to a range of emergencies comprises mobile cranes, rescue vehicles, pumpers and tankers. Mechanical equipment must be maintained to a high standard to ensure its efficiency and reliability. This involves a preventative maintenance program, repair of breakdowns, general repairs and overhauls, rebuilds and modifications, as well as inspection and management of contract work for specialised and non-critical work.

The study goals were to determine the requirements of the Engineering Workshops' customers, convert these into functional objectives and then derive the policy settings required to achieve those objectives.

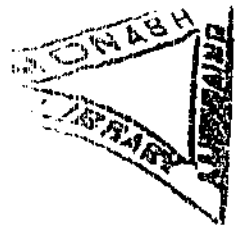
The planning process, based on the Manufacturing Audit Approach, was adapted for the service factory orientation of the Engineering Workshops. The Engineering Workshops team took part in seven meetings at which the researcher acted as a facilitator, providing the required structure and advising on its progress. The meetings used the worksheets as an outline agenda and as the basis for discussion, aiming to reach a consensus on the completion of each stage.

At Engineering Workshops, similar worksheets to those used at Trico Australia were adopted with some minor modifications which are indicated by prefixing the number with an 'F', refer Table 3.4.

Worksheet	Subject
F1.1	Gap Analysis – Customer Requirement
F1.2	Gap Analysis – Achieved Performance
F2	Share of Work by Service Group
F3	Service Winners by Group
F4	Current Service Operations Performance
F6	Assessing Current Engineering Support Strategy
F8	Action Plan

Table 3.4 Worksheets used in the Engineering Workshops Audit

Worksheet F1 (Gap Analysis of Customer Requirement and Achieved Performance) was used as a graphical illustration of the difference between customer requirements and operations performance on a number of criteria. The existence of differences motivates the team to proceed with the Audit process, as well as providing clues to the areas of strategic concern. Worksheet F2 (Share of Work by Service Group) was used to obtain a picture of the organisation's operations divided into service groups, which had implications for service processes, people and information systems. Considerable modification to Worksheet 2 was required to develop service groups to represent major areas of service delivery of the Engineering Workshops. Worksheet F3 (Service Winners by Group) was used to identify the most important market requirements in operations terms by product family.



Further worksheets assessed the current state of servicing and derived the strategies and policies required to improve the fit between operations performance and customer requirements. Worksheet F4 (Current Service Operations Performance) measured the current performance of service maintenance against the criteria identified as important in Worksheet F3, for each product family. Worksheet F6 (Assess Current Engineering Support Strategy) was used to identify the status of policies in the current operations strategy and to assess what effect these had on the achievement of objectives established in the previous stages. Worksheet F8 (Action Plan) was used to help members to translate the policy solutions into an Action Plan for each service family. Each Action Plan set down the actions required in each policy area against a three-year time scale to achieve service advantage in that area. Worksheets 5 and 7 from the MAA were not used, as they

were not appropriate in the service situation. Worksheet 5 (Opportunities and Threats) was not helpful because it stimulates team members to look very widely, whereas the intention was to examine the particular functional contribution of Engineering Workshops to the Operations Division of the emergency service. Worksheet 7 (Action Worksheet) was replaced by Worksheet F8 (Action Plan) to simplify the process in the service operations situation.

The planning process used at the Engineering Workshops is described in Chapter 4.

3.4.2 Phase 2:Modify MAA into SOLP and Create Propositions

Phase 2 involved two steps. Based on the experience gained at Trico Australia and Engineering Workshops, the first step of Phase 2 modified the MAA into a new process called Strategic Operations and Logistics Planning (SOLP). In the second step of this research phase, a number of propositions were designed to collect information about the research hypotheses. This step is described below.

The final MAA Worksheet, known as 'Strategy Derivation', was a good tool in stimulating team members to generate new strategic alternatives by focussing on the weaknesses isolated. However, experience with managers in Trico and Engineering Workshops taught the researcher that a list of required strategies (i.e. new policies) was not enough to enable implementation to commence. The latter requires a time-phased Action Plan, so that managers are clear about the order in which actions are to be taken (refer Table 3.5). Hence a key finding from this work was the lack of an implementation plan.

The support given to the team was modified. Team members were required to fill in worksheets individually to under-pin the democratic nature of input from every member of the team. The team was split into two groups for later worksheets, when the intention was to focus on one product family at a time. This split enabled more detailed consideration of strategy in the smaller group and enabled faster progress.

The second step in Phase 2 was to find suitable ways to measure the success of SOLP both as an operational process and as an instrument to generate answers to the research

hypotheses in the study. The researcher obtained a significant understanding of the process through being present. In addition, feedback from individual team members was obtained by a questionnaire. A questionnaire was constructed which would investigate each manager's current duties and his/her understanding of strategic management. This questionnaire would be administered in individual interviews at the start and end of the SOLP process. This was considered to be more effective than putting questions on the back of worksheets, as had been done in Phase 1. Appendix 2 gives an example of the questionnaire used.

Twelve propositions were developed to assist in testing the following five research hypotheses:

H1 The SOLP process can be applied effectively to the meat processing industry, which has some significant differences from other manufacturing industries.

H2 The SOLP process is operationalised for manufacturing companies, because barriers to success have been removed.

H3 An extended MAA process (SOLP) effectively links operations and logistics into a complete functional strategy.

H4 The SOLP process contributes to improved strategic decision-making by improving strategic actions of the managers involved.

H5 Action Research provides an approach which engenders an effective SOLP process.

The hypotheses address important issues in understanding strategic operations and logistics planning, but they are not stated in the best form for testing. The solution to this difficulty was to augment the hypotheses with a number of propositions, which can be tested, and whose confirmation would support or deny the hypothesis to which each relates. Each of the five research hypotheses is related to a number of the propositions.

The propositions, in turn, stimulate specific questions which are answered during SOLP formulation or by interviewing team members.

Table 3.5

WORKSHEET 8 **ACTION PLAN** **Initials:** ___PHG & group

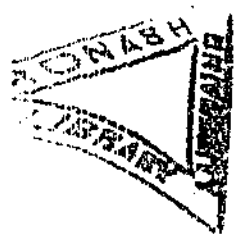
Product Family ___Fresh Sausage

Policy Area	Year 1- 1998				Year 2- 1999		Year 3/4
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Jan-Jun	Jul-Dec	
Facilities-Meatworks		Gauge collagen Fix Bratwurst	New chains	Decide capital options	Buy new equipment		
Capacity	Under-utilisation to be explained						
Vertical Integration							
Processes & Technology		Resolve store branding issue					
H Resources							
Quality							
Control Policies		Convert sausage scheduling to new sequence		Explore national distribution			
Suppliers							
Distribution							
New Prod. introduction			Explore Gourmet range & 'Healthy sausage"		Product introduction		
				Halal, Kosher			

For example, hypothesis 4, *the SOLP process contributes to improved strategic decision-making by improving strategic actions of the managers involved*, is augmented into the following five propositions:

- **Pr3** Implementing SOLP leads to observable end results;
- **Pr9** Preparation of a strategic plan is not an end in itself: it is a step on the road to strategic operations management;
- **Pr10** SOLP leads to advantage over competitors through improved operations performance;
- **Pr11** Managers need to have an orientation towards the future to take strategic initiatives; and
- **Pr12** Operations/ logistics strategy must be communicated throughout management (often expressed as throughout the organisation) in order to make a difference in performance.

The full set of propositions is presented in Table 3.1

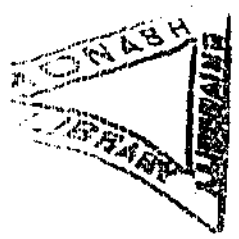


3.4.3 Phase 3: Apply SOLP in two Meatworks and Measure Degree of Understanding of SOLP Process

In the third phase of the research, the Strategic Operations and Logistics Planning process was applied to two Australian meat processing companies. Five meatworks were approached by telephoning a director to take part in this phase of the research. These meatworks were selected on the recommendation of a colleague or because they were known from previous work. It is important to have a personal connection in the meatworks because management is unwilling to communicate with unknown outsiders. The two companies used, known as Flock and Wilson, are both in regional Victoria. These companies were selected because they were the only ones which agreed to participate in SOLP and because they were close enough for the large number of visits required. Particular features of the meat industry and their effects on strategic operations planning are set down in Chapter Five, section 2.

In each meatworks, the process started by the researcher holding a meeting with a director on their premises to explain the benefits of the process. At Flock, a meeting with the Managing Director and the General Manager gave them a positive impression, which led to a meeting with the Financial Controller. As a consequence of that meeting, the Managing Director agreed that Flock would take part in the process. A team of seven senior managers was appointed (refer section 6.1) and this team held seven meetings over four months (refer Chapter 6, Table 6.1).

At Wilson, a meeting was held with the Sales and Marketing Director. He was very interested in the SOLP process and gave permission for the process to commence. This team comprised eight managers and supervisors (refer section 6.2), who held seven meetings over four months (refer Chapter 6, Table 6.7). Meetings of both teams took place at two-weekly intervals on the meatworks premises. Much work was required to explain the customer objectives and operations policies in concepts and language understood by the meatworks managers. Difficulties were encountered because many of the members had limited management training and no previous exposure to strategic planning. These difficulties were overcome with help from the academic facilitator. Eventually strategic operations plans were compiled for four product families at each meatworks. Full descriptions of these processes are given in Chapter 6.

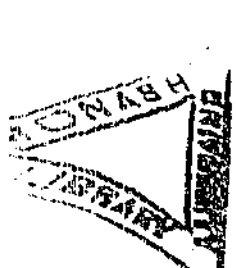


In addition to the team meetings at the two meatworks, team members were individually interviewed at the start and end of each SOLP process. These interviews aimed to determine members' understanding of the SOLP process and their progress, if any, as a result of the process. The interview questions, refer section 3.2.3, were chosen to elicit information about strategic planning propositions which, if supported, would support the research hypotheses. The researcher also interviewed two senior managers at each meatworks over two years after the SOLP process finished. These interviews aimed, firstly, to obtain a clear view of the effect of the SOLP process on decision-making at each meatworks sufficiently later to assess which of the planned actions was implemented. Secondly, the interviews posed the twelve propositions (refer section 3.4.2) to the two managers to obtain their views. The interview responses are presented in section 6.4.

3.4.4 Phase 4: Extend SOLP to the Supply Chain

The literature review showed that there was strong conceptual backing for planning the whole supply chain together (Jouffrey and Tarondeau 1992, p. 170). Also it was clear during Phase 3 that a great deal of ability to satisfy customers lay with suppliers and distributors rather than with the meatworks themselves. Hence SOLP was extended in order to plan operations for all firms in the supply chain together. This change forms the basis of Phase 4.

The extended SOLP aims to have operations policies for all firms in the supply chain considered by members of the planning team. Attempts are made to involve operations managers of suppliers and distributors in the planning process, either by their formal presence on the team or by communications during the process. To achieve this aim, the Operations Manager is advised to include suitable managers when membership of the planning team is decided. Teams were strongly encouraged to add logistics criteria and policies into order winning criteria, performance reviews and operations policies. A key assumption in such planning is that each supply chain firm is prepared to give up some of its sovereignty for the good of the whole chain and its status with customers.



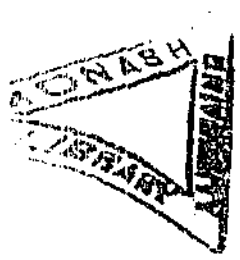
The changes to the SOLP process to achieve this extension through Phase 4 are described in Chapter 7.

3.4.5 Phase 5: Apply SOLP in one Meatworks and Measure Degree of Understanding of SOLP Process

Phase 5 of the research comprised the application of the SOLP process in one meat processing company including involvement from its suppliers and customers. This extended process required higher management competencies and better training in generalist areas than the process applied in Phase 3. A smallgoods meatworks in Melbourne, referred to as 'Bradley', was chosen because it fitted these criteria. It is a subsidiary of a diversified food processing company. A research student put the researcher in touch with Bradley's Operations Manager. A meeting with the Operations Manager engendered great interest and recognition that the timing would soon be right

for Bradley to undertake a SOLP process. A further meeting with the Operations Manager and the General Manager, who was effectively chief executive of the meatworks, led to permission to proceed. Bradley was prepared to try out the fuller process. A team of twelve managers was appointed (refer section 7.5.1) and it held seven meetings over seven weeks (refer Table 7.3).

The particular changes intended when the SOLP process was augmented to include supply chain partners at Bradley are as follows. The operations manager was advised that it is important to include representatives of supply chain partners in the team, starting with the company which rears the animals and continuing through the chain to the retailers who sell to end consumers. An invitation was issued to the general manager of the boning room, which supplied most of the meats for the smallgoods manufacturer, to join the planning team. Although not invited on to the planning team, retail customers were consulted or visited. The logistics, purchasing and packaging managers of the meatworks were included in the planning team to play an active part throughout.



Apart from the involvement of suppliers in the planning process, the process application was similar to that at the first two meatworks. Again the researcher acted as external facilitator with the planning team in a series of workshops. As in the previous processes, team members were interviewed before and after the process. These interviews determined their understanding of the SOLP and measured how this understanding was changed by the process. Answers to the questions will also be used to support, or deny, the theoretical concepts propounded. That is, case study research is employed to examine whether answers are replicated between cases to support propositions.

Some three months after the first process, management of the smallgoods meat company decided to apply the process for a second time with four more product families. The researcher was asked to set down the preconditions and content of a second SOLP process. This led to a meeting with the Operations Manager and the Organisation Development Manager, at which the decision to proceed was made. The second process took place in a similar manner to the first with a team of twelve managers (refer section 7.5.2) which held seven meetings over a period of three months (refer Chapter 8, Table

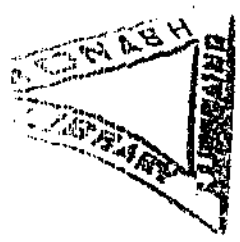
7.5). As in the first process at Bradley, team members were interviewed before and after the process.

The researcher also interviewed two senior managers at Bradley six months after the second SOLP process finished. These interviews aimed to view the effect of the SOLP process on decision-making at Bradley sufficiently later to assess the degree of implementation and to pose the twelve propositions (refer section 3.4.2) to obtain the managers' views. The relatively short time between the end of the process and these interviews was constrained by the need to obtain information for this thesis. Fortunately, the rapid implementation of plans at Bradley prevented any loss of information.

The application of SOLP at Bradley on both occasions and its outcomes are described in sections 7.4 to 7.6.

3.5 Analysis

During Phase 1 of the research, the researcher used his experience as facilitator to observe the effect of the MAA process on managers. The results of this experience are embodied in the SOLP process in Phase 2, 'Development of the SOLP Process and Propositions' which is described in Chapter 5.

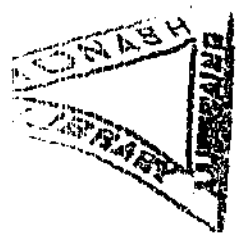


The researcher observed the effect of the SOLP process on team members during Phases 3 and 5, at the three companies involved, to find out which actions assisted or detracted from the process. The lessons learned are described in section 6.1.2 (for Flock), section 6.2.2 (for Wilson) and section 7.6.1 (for Bradley). He also interviewed each team member before and after each process. Responses to the interview questions were summarised in spreadsheets to assess the changes in participants' actions and understanding of strategic operations planning before and after the process (Appendix 4). These summaries are described in section 6.3 (for Flock and Wilson) and in section 7.6.2 (for Bradley). Observations during the processes and the responses to questions are compared across the four applications at the three companies (refer sections 8.1-8.2). The resultant findings regarding the research hypotheses are interpreted in section 8.3.

3.6 Limitations

The research is considered to be a valid indication of the scope of Strategic Operations and Logistics Planning in the meat processing industry. With a small sample of companies, it is not possible to be certain that the results represent all companies in the meat processing industry. However, there is no reason to doubt that the findings would apply to other parts of this industry. Initially two companies were used to investigate the suitability of the MAA method in Australia and then SOLP was applied in three meatworks. This method is acknowledged to set limits on the generality of the work carried out. The size of the sample was constrained by the considerable quantity of work required within each company. The emphasis in the use of Action Research was to develop further a feasible operations planning process by working closely with managers in those companies, rather than to obtain a summary of the effect on the whole industry.

The SOLP process is considered likely to be applicable to most manufacturing and distribution companies. The next logical stage is to see whether the process is generally applicable. The method is most applicable in companies where managers are well-trained and organised. It is less likely to be useful in firms without these attributes where control is limited to a few individuals and business is driven predominantly by outside forces.



3.7 Summary

This chapter describes the methodology adopted to develop the process of Strategic Operations and Logistics Planning which enables manufacturing and supply chain managers to achieve balanced consideration of their functions in the firm's strategic debate. The decision to apply this process in the meat processing industry is supported by its considerable importance to the Australian economy and the paucity of previous research work into planning or decision-making in this industry.

This chapter sets out the methodologies and instruments used to investigate the research topic. It describes the five phases of the research undertaken and justifies their relevance, sequence and overall sufficiency. It explains the types of data collected during four process applications in the meat processing industry and the analysis conducted on that

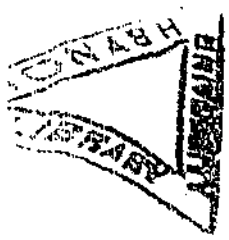
data. Replication is claimed for many propositions between the four applications. This analysis is subsequently used to support or deny a number of propositions which, in turn, support or deny research hypotheses. The following chapter, "Assessing the Value of the Manufacturing Audit Approach" explains how the MAA process was applied in two Australian companies.

CHAPTER 4

ASSESSING THE VALUE OF THE MANUFACTURING AUDIT APPROACH

"This research has resulted in an audit process which has been shown to be feasible, usable and useful for structuring the analytical stages of manufacturing strategy formulation." (Platts and Gregory 1992, p.53).

The Manufacturing Audit Approach (MAA) was applied in two companies in Melbourne, Victoria, building on the work of Platts and Gregory (1990), in Phase 1 of the research. The aim was to understand how the MAA worked with operations and other functional managers and then to improve it and adapt it to local conditions. The application is described in some detail at each company to explain the grounds for such adaptation to be carried out. The findings from this work are described.



4.1 Application of the MAA to Trico

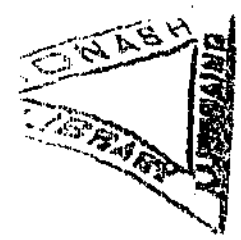
The first company, Trico Australia, is a Melbourne-based manufacturer of windscreen wiper components and assemblies which has been introduced in section 3.4.1.1. The organisation of the operations planning process at Trico has also been described in that section. After initial contact with the Operations Director, the researcher held a second preliminary meeting with the Operations Director and the Managing Director to confirm that Trico would undertake the Manufacturing Audit Approach and to establish the initial senior management team chosen for the process. This team comprised the Managing Director, Operations Director, Marketing Manager (Commercial Products) and Chief Accountant, with the researcher acting as facilitator to the team. Dates for a series of two-hour, weekly meetings were also arranged.

Nine MAA worksheets were to be completed by team members. Worksheet 8 was added to ensure that a list of actions against a time scale was derived (refer Table 3.3). A set of

questions was developed to measure the reaction of the managers to the process. The questions and a set of instructions for completion were printed on the back of each worksheet. A set of worksheets with examples was prepared to help managers understand the information required. An 'other' category was added to each worksheet to prevent the headings being restrictive.

Six two-hour meetings were held on company premises. At the start of the first meeting, the Trico managers realised that not all the functional managers were represented on the team. The Managing Director invited the following colleagues to join the team: Marketing Manager (After Market), Purchasing Manager and Human Resources Manager so that the full team became:

- Operations Director
- Managing Director
- Marketing Manager (Commercial Products)
- Marketing Manager (After Market)
- Chief Accountant
- Purchasing Manager
- Human Resources Manager



At the first team meeting the Managing Director explained that he wanted the facilitator to guide members through the MAA process. The facilitator then gave an overview of the Audit process and the benefits to Trico of deriving operations strategies for major product families. Each team member completed Worksheets 1.1 and 1.2, Profiles of Market Requirements and Achieved Performance, for products generally. The Product families and competitive criteria used are given in Table 4.1. There was debate between the team members over the appropriate definition of product families. A considerable amount of discussion took place leading to the team assigning all products to one of six product families. Order winners for one product family were assessed during the meeting. Two members of the team were delegated to fill in the worksheet containing product family market data. The team was very effective in collecting this data and friendly towards the researchers. Members quickly became motivated to carry out the process.

Product Families	Competitive Criteria	Operations Policy Areas
Blades and Arms to OEM*	Delivery lead time	Facilities
Blades to Export	Delivery reliability	Capacity
Commercial Blades to Export	Features	Span of Process
Linkages to OEM	Quality	Processes
Refills to Aftermarket	Flexibility of design	Human Resources
Heavy Duty Wiper Assemblies	Volume	Quality
	Price/ Cost	Control Policies
		Suppliers
* Original Equipment Manufacturers		Distribution
		New Product Development

Table 4.1 Product Families, Competitive Criteria and Policy Areas used at Trico

After the meeting, each member filled in copies of the first two (profile) worksheets for six product families. These were combined by the researcher into variations along the Likert scales and the average profile was obtained by connecting the mean choice on each competitive criterion down the page. Superimposing the profile for the market requirement over the profile for the achieved performance illustrated graphically those criteria on which the company was perceived to be under- or over- achieving.

At the second meeting, three days later, the facilitator circulated the profile worksheets for all six product families. Generally there was good coherence between market requirements and achieved performance for five of the six product families. One of the team members described the insight he had obtained from the profiles as "Reasonable correlation in a number of product groups but serious differences between market requirements and performance in Heavy Duty and Refills" (this refers to two of the product families). Worksheet 2, Product Family Market Data, was presented to the team and accepted with some minor amendments. The concept of order winners and order qualifiers was explained and members filled in Worksheet 3 for one product family. The planning team reviewed the need for totally new markets and decided that these need not be considered because there was sufficient and stronger growth available in their current areas. At this stage the team was asked to review Trico's mission statement and objectives. In the absence of formal business objectives, it was recognised that specific, accountable objectives were necessary. Led by the Operations Director, the team

constructed a set of objectives and delegated three members, including the Managing Director, to review these for the next meeting. The agreed objectives comprised financial ratios, positions to be reached on technology and quality, and several internal performance indicators. Worksheet 4, Current Operations Performance, was explained by means of an example and team members completed the worksheet for each product family. In assessing the company's Current Operations Performance for each product family, members considered whether performance generated a disadvantage or an advantage compared to competitors' performance. The combined responses showed a predominant view in most cases. After the meeting, members filled in Worksheet 3 for the remaining product families.

At the third meeting, one week later, a version of Worksheet 3, Competitive Criteria, summarised across all team members, was tabled. Members discussed this worksheet and amended it into an agreed consensus of order qualifiers and order winners for each product family. The facilitator explained an example of Worksheet 5, External Opportunities and Threats, to the team. Each member wrote down the external opportunities and threats which he foresaw for each product family. A combined list from the individual sheets was presented to the team and used as input to the later worksheets. Team members found it difficult to restrict this assessment of opportunities and threats to functional issues. They tended to look at the full business strategy of the company.

The fourth meeting took place one week later. A summary of Worksheet 4 was circulated. The team was asked to choose a product family for which they wanted to develop the first manufacturing strategy. When this had been decided in favour of Commercial Blades for Export (i.e. car windscreen wiper blades) , each member of the team wrote down the current practice for each policy area (Table 4.1 lists the policy areas) and hence assessed the Current Manufacturing Strategy, Worksheet 6 and its contribution to competitive criteria. Meanings of some of the policy areas were explained to members. A consensus view was constructed by the Operations Director reading out his results which were transcribed and amended for different views expressed by other team members. Reviewing Worksheet 6, one of the members said "Discussion with colleagues is necessary to obtain clearer understanding." The team then proceeded to fill

in the Strategy Derivation worksheet for the same product family (Worksheet 7) so that improvements were captured as they were identified and the team came to consensus in a similar manner.

At the fifth meeting, a week later, the team chose two more product families, 'Blades and Arms to Original Equipment Manufacturers' and 'Heavy Duty Wiper Assemblies', and completed Worksheets 6 and 7 for each of them. The Operations Director particularly wanted to examine 'Blades to Export' as a fourth family. This was done by amending the strategies for 'Blades and Arms to OEM' to those required for this new family.

In the sixth meeting, a further week later and seven weeks after the first meeting, the team used an additional Worksheet 8, Action Plan, to prepare a plan of the actions intended set against a time scale of the ensuing four years (for format refer Table 3.5) for all four product families. This Action Plan drew together information on the previous worksheets. Individual views sparked a discussion from which emerged a consensus view of the actions required. This was the final development of operations strategy for the product families and was used as input to a senior management planning conference held the next day. At the end of the process, the Trico team had constructed strategic operations plans for four product groups over six meetings. The MAA worksheets had been used as a visual reference to the thought processes. The Purchasing Manager commented "The Manufacturing Audit Approach provides the steps that clearly define the necessary direction to be taken."

The Trico management team spent a total of 90 hours in workshops on the project plus another 10 hours independently completing the worksheets, using their experience and collecting relevant data. For example, worksheets relating to individual product families were left behind for completion by the team members. These were collected and analysed by the facilitators and the majority team findings were relayed back to members at the next meeting for discussion and alteration before further worksheets were completed.

The Operations Director indicated, some months later, that one of the product family strategies, in particular, had been successfully used by Trico to transform its manufacturing process into a much more appropriate configuration. Reviewing this

situation several years later, he said that Heavy Duty Wiper Assemblies had grown into a $A 2.5 million business on the export market from very small domestic beginnings.

After the completion of each worksheet, members were requested to answer the review questions (refer Appendix 1). Analysis of these questions showed that team members considered that the MAA process was a feasible method which successfully supported them in the creation of novel, valid operations strategies. However some weaknesses emerged. These weaknesses and other findings are discussed in section 4.3 below and their solutions are addressed in Chapter 5.

4.2 Application of the MAA to Engineering Workshops

The second organisation, the Engineering Workshops of the Melbourne Metropolitan Fire Brigade, maintains and repairs all the vehicles used by operating fire teams. It is introduced in section 3.4.1.2. The organisation of the strategic operations planning process at Engineering Workshops has also been described in that section. Access was gained to the situation because the researcher had been carrying out studies of equipment reliability decisions. A major motivation for the workshop management team applying the MAA was their concern that the Government might drastically change their breadth of responsibilities.

As at Trico, the aim was to understand how an amended Manufacturing Audit Approach would work with operations and other functional managers in this rather different situation: an engineering maintenance function. The planning process, designed for manufacturing companies, was adapted for the service factory orientation of the engineering workshops. The Engineering Workshops team was intimately involved in the Audit process through a series of meetings similar to those at Trico. The meetings used similar worksheets (Refer Table 3.4) as an outline agenda and as the basis for discussion, aiming to reach a consensus on the completion of each stage. The word 'service' is substituted for 'products' in all stages of this audit process because the situation is one of services being carried out, rather than product groups being manufactured.

The method of applying the strategic planning process to Engineering Workshops will be explained by describing the work done at each of the meetings in terms of the worksheets completed and the stages of 'thinking' reached. Meetings took the form of brief inputs from the researcher interspersed with discussion and analysis by team members, working in three groups. During the first two meetings, the facilitators worked to gain credibility with team members. There were some changes in team composition during the first three meetings. Nine team members were involved in the whole process:

- Engineering Manager
- Procedures Manager
- Quality Manager
- Engineering Foreman
- Research Manager
- Supply Manager
- Fleet Management Manager
- Subsidiary Workshop Supervisor
- Main Workshop Supervisor

At the first meeting, a presentation on the scope of the Manufacturing Audit Approach and its application to an engineering service function was given to the team. Members then carried out a gap analysis using Worksheets F1.1 (Profile of Customer Requirements) and F1.2 (Profile of Achieved Performance) as a graphical illustration of the difference between customer requirements and operations performance on a number of criteria (a list of worksheets is provided as Table 3.4). The existence of gaps motivates the team to proceed with the Audit process, as well as providing clues to the areas of strategic concern. Team members were asked to rank the magnitude of customers' requirements on a series of criteria on a Likert scale. They were then asked to score their achievement on each criterion on a similar Likert scale. Combining the achievement with the criterion requirement gave an initial, subjective identification of the areas in which improvement was needed to better satisfy customers. This task was attempted before service groups had been identified. A considerable amount of time was spent identifying

the customers of the Engineering Workshops. A case study of a hospital was used to help the team think about their function as a service factory (Krajewski and Ritzman 1993).

At the second meeting, team members revised the service criteria from those used by the previous organisation to thirteen criteria more applicable to their functions (Table 4.2 lists these criteria). Also Worksheet 2 (Share of Work by Service Group) was used to obtain a picture of the company's services broken up by families which had implications for service processes and human resources and information systems. Critical re-assessment of the service's mission and aims was undertaken. Considerable modification to Worksheet 2 was required to develop service groups to represent major areas of service delivery of the Engineering Workshops. Engineering Workshops team members were not accustomed to splitting their functions into a number of categories for planning and business development purposes. In fact they were not used to changing policies because of the legal and planning directives supplied by top management which mitigated against development. A substantial amount of thinking and group discussion led to the following five service groups:

- Emergency Maintenance
- Preventative Maintenance
- Service Repairs
- Quality Assurance
- Component Preparation

At the end of this meeting, team members were introduced to a case about a naval aviation maintenance depot which closely parallelled their situation (Fargher 1988, p. 281-286).

At the third meeting, the main task was to assess the service winners for each service group. Service winners are policy criteria which must be emphasised for that group to render superior service to the customers. Using Worksheet F3, Service Winners by Group, each team member assessed the criteria required for each service group, and was required to allocate 100 marks over the criteria for each group.

Service Criteria	Service Policy Areas
Competency review	Competency review
Procedures	Documentation
Process efficiency	Demand response
Documentation completeness	Emergency response
Response to demand	Repair quality
Reliability of delivery	Action time
Reporting	Cost
Response to emergencies	
Quality of repair (Inspection)	
Time for action	
Cost	
Replacement vehicle	
Accurate diagnosis	

Table 4.2 Service criteria and policy areas used at Engineering Workshops

For the fourth meeting, the whole team went to a regional headquarters of the operations division of the emergency service for one day to obtain specific service requirements from the chief regional managers and from twenty members of operational crews. A large part of the day was spent on improving the Service Winners worksheet and starting the next step, an Audit of Existing Performance for each service group. The final activity at the fourth meeting was deriving Distinctive Competencies, which comprise a statement of the specific operating competencies which the service business needs to have if it is to satisfy its customers in future situations.

Further worksheets assessed the current state of servicing and derived the strategies and policies required to improve the fit between operations performance and customer requirements. Worksheet F4 (Current Service Operations Performance) measured the current performance of service maintenance against the criteria identified as important in Worksheet F3, for each service group. The policy areas used are given in Table 4.2.

At the fifth meeting, the team made its first attempt to determine the support strategies required by each service group in terms of the necessary policies. Each service group strategy would later be represented by an action plan and a paragraph describing the strategic aims, for each group. Worksheet F6 (Assessing Current Engineering Support Strategy) was used to identify the status of policies in the current operations strategy and to assess what effect these had on the achievement of objectives established in the

previous stages (refer Table 4.3). For each service group, Worksheet F6 is a matrix which has the familiar competitive criteria, now called service winners, as a series of row headings and a set of policies and procedures as the column headings. The matrix is large but members need only fill in those cells (policy/criterion combinations) which are most important in their view. The team was next asked to identify physical performance measures which would be needed to report the extent of progress.

Service Group: Preventative Maintenance	**Policies and Procedures***					
Service Winners	Quality	Time	Docum-entation	Cost	Schedule	Perform-ance
Competency Review	1	1	1.5	0	1	1
Procedures	0	1	1.5	na	1.5	1
Process Efficiency	1	1.5	1.5	0	1.5	1.5
Documentation Completeness	1	1.5	1.5	1.5	1.5	
Response to Demand	1	1	1.5	1	1.5	1.5
Reliability of Delivery	0	1.5	1.5	1	1.5	1.5
Reporting	0	1	1	1.5	-1	
Quality of Repair	1.5	1	1.5	1.5	1	
Time for Action	0	1.5	1.5	1.5	1	
Cost	na	na	na	na	na	
Replacement Vehicles	1.5	1.5	1.5	1.5	1.5	

Table 4.3 Worksheet F6 Assessing Current Engineering Workshops Strategy

* Assessed on a Likert scale from –2 (very poor) to +2 (very good)

na = not applicable

Instead of Worksheet 7 (Strategy Derivation), Worksheet F8 (Action Plan) was used to identify the main operations problems, to generate some possible actions to solve those problems and to help members to translate the policy solutions into an Action Plan for each service group. Each Action Plan set down the actions required in each operations policy area against a three-year time scale to achieve required service delivery in that area. During meeting six, the team filled in this worksheet for each service group.

At the final meeting, a presentation was made by team members and facilitators to the General Manager in charge of the Engineering Workshops. Also each team member was interviewed to obtain his view of the operations planning process (refer Appendix 1 for interview questions). This use of interviews was substituted for review questions on individual worksheets, as it was difficult to get team members to answer review questions and the answers were often not helpful. A few comments by members are given to provide the flavour of these interview responses:

- In response to 'Do you think the process worked': "Yes, everyone has a better understanding",
- In response to 'Is the plan which you derived effective?': "Yes, subject to acceptance by all staff, shop floor and senior management", and
- In response to a request for other comments "The facilitators were most helpful in arranging this formidable task".

The culmination of six long meetings was a skeletal service operations plan containing time-phased Action Plans for immediate implementation for five service groups. The research demonstrated the feasibility of using the Manufacturing Audit Approach to enable a support department to generate strategic operations plans. Several months later, the Engineering Manager stated that the strategic operations planning process had helped his team to understand how they could better provide for the needs of their customers in the Operations Division. As a result of the work done on the strategic operations planning exercise, the workshop sends customer response sheets to Operations with every vehicle maintained (Lindner 1997). Specific implementation of the plans had been thwarted by the resignation of the Engineering Manager's superior immediately after the process was completed.

Thus the Manufacturing Audit Approach was transformed into a planning process for Engineering Workshops with a modified approach, including changes to the row and column headings used on the various worksheets, because it is a 'service factory' with many parallels with manufacturing factories.

Team members were interviewed at the end of the process to find out how they viewed the process and its outcomes (refer Appendix 1 for questions asked in the interviews). Members saw the MAA process was a feasible method which had enabled them to formulate operations strategies for four service groups. The weaknesses which had emerged and other findings are discussed in section 4.3 and their solutions are addressed in Chapter 5.

The following is a direct quote from the Engineering Workshops Manager two years after the MAA was carried out with his team:

> *As a result of the strategic planning process, my Engineering Workshops sends customer response sheets to Operations with every vehicle. Workshops personnel monitors vehicles halfway through each service cycle by contacting operations to find out whether the previous service was effective. I expect to achieve formal quality accreditation in three months time. After the reduction by two pumpers in the fleet of 54 as a result of the MAA process, I expect to reduce by a further three vehicles with the introduction of a new model of pumper.* (Lindner 1997)

It is clear that the Engineering Workshops team made major progress in identifying their customers' needs through the MAA process from being a very technical, self-centred department. The reduction in number of vehicles required was also attributed to analysis stimulated by the strategic planning process.

4.3 Findings

The findings obtained by applying the Manufacturing Audit Approach in two Australian organisations are described, dealing with those affecting the set-up of the process, then weaknesses found during meetings and, thirdly, findings at the end of the process. The emphasis is on problems and changes; parts which are effective are not mentioned.

During the organisation of the MAA process, it is necessary to keep the number of team members to an ideal maximum of nine. If this number is exceeded, it becomes progressively more difficult to run effective team meetings. It is very important to obtain

the support of the Operations Manager's superior so that the process has sufficient support to be completed and so that the team has an increased chance of implementing its strategies. Members involved in these Australian applications have tended to be at senior manager level rather than directors. Platts and Gregory had workshop members generally at director level (1990, p. 23). Workshops have been chaired by the facilitator and the Operations Manager, rather than the Managing Director as practised by Platts and Gregory (1990, p. 23).

A number of findings were made as a result of participating in the meetings used in the MAA process. It is important to create a democratic atmosphere by encouraging each team member to complete his/her own worksheets. The availability of an external facilitator at every meeting both guides members on the MAA process and increases the ability of each member to make inputs, irrespective of his/her place in the organisation. The two Australian trials showed that meetings of two hours duration are about as long as most members can concentrate on strategic planning. However, there appears to be a point, about half-way through the process, when the team has sufficient momentum that it can make major progress during a day-long meeting.

Operations Managers can be far removed from customers in their everyday responsibilities. Yet the MAA requires these managers to derive the order winning criteria for each product family. One solution is to bring a customer into a team meeting so that members can hear the customer's needs first hand. Worksheet 5, External Opportunities and Threats, did not help to formulate operations strategy. It is debatable whether this worksheet should be included. Team members find Worksheet 6 (Current Operations Strategy) quite difficult to complete, since it is a large matrix of operations policies and competitive criteria for each product family (refer Appendix 2). It may be possible to simplify this worksheet by asking team members to concentrate on completing those columns with high-scoring competitive criteria for the particular product family.

The two trials demonstrated the importance of guiding team members through to the resultant strategic actions in Worksheet 8 for one or two product families as early as

possible in the process. The completion of the first version of this worksheet motivates members, since they understand more clearly what they will obtain from the process. The trials also supported the use of the Worksheet 8, Action Plan, which sets out the actions required in each policy area against a time scale so that their sequence is determined (refer Table 3.5 for an example of this worksheet). This worksheet was not used in the original MAA process. It was found to be an important step in operationalising the process.

It appears that less use of formal information was made in the Australian organisations than Platts and Gregory made (1990, p. 10 and p. 24). In many cases, team members already knew the information required to complete the MAA worksheets. Particularly at Trico, members' knowledge of their business was extremely wide.

In the trials, interviews with team members at the end of the process were found to be a more reliable source of information than asking members to make their comments on the back of worksheets during the meetings. After the process is complete, members have a better understanding of the value of the process to them and the one-on-one situation allows them to be candid about their views.

In summary, the applications of the MAA in the two Australian companies confirm the findings of Platts and Gregory (1990, p.24) that the process is feasible, useable and useful. The process is considered feasible because both organisations did not have any problems in following it. The Operations Director at Trico stated "Yes, the process is very good; it formalises operations planning". It is considered useable, excepting the comments made above, because no great difficulties were encountered. One of the Engineering Workshops members stated that the most useful elements for him in the meetings were "Gap analysis, other people's ideas, understanding weaknesses, group participation was very helpful." The process is found to be useful because, in both cases, the organisation formulated strategic operations plans for areas which previously lacked such plans. One member at Trico said "The process gave logic to new product introduction, which was not there before".

Once the MAA had been tried in two Australian organisations, sufficient understanding and experience had been gained to apply it to other companies. The next chapter explains the modifications carried out to make the process more effective in Australian companies and, specifically, in the meat processing industry. Chapter 5 also describes how propositions were derived to test the effectiveness of the modified process.

CHAPTER 5

DEVELOPMENT OF STRATEGIC OPERATIONS AND LOGISTICS PLANNING PROCESS AND PROPOSITIONS

"A good planning process is unique to its company and even to the businesses within the company. It is not a generic process but one in which both analytic techniques and organisational processes are carefully tailored to the need of the business." (Campbell, 1999).

This chapter documents Phase 2 of the research. It restates the research hypotheses so that it can be seen how they require investigation in the Australian meat processing industry and how they drive the building of a new process, Strategic Operations and Logistics Planning (SOLP). Management of Australian meatworks is investigated to isolate implications for operations strategy in meatworks. This new process is an extension of the Manufacturing Audit Approach which is carried out over three months and which aims to provide more support for the team carrying out the planning process. Because the research questions themselves are not easy to test, a number of propositions were developed. The results of such testing provide support for, or refute, the research questions.

5.1 Research Hypotheses

The research investigates the ability of a tailored Strategic Operations and Logistics Planning (SOLP) process to assist operations and other functional managers in meatworks to craft effective strategies. The research hypotheses are:

H1 The SOLP process can be applied effectively to the meat processing industry, which has some significant differences from other manufacturing industries;

H2 The SOLP process has been operationalised for manufacturing companies, because barriers to success have been removed;

H3 An extended MAA process (SOLP) effectively links operations and logistics into a complete functional strategy;

H4 The SOLP process contributes to improved strategic decision-making by improving strategic actions of the managers involved; and

H5 Action Research provides an approach which engenders an effective SOLP process.

5.2 Operations Strategy for a Meatworks

It is clear from section 1.4 that the meat processing industry is an essential part of the Australian economy and that the industry has been changing rapidly during the 1990s. Evidence is also cited that meatworks lack management competencies, training and planning skills in operations areas and will require considerable change to both structure and infra-structure if they are to win future export business (Andrewartha et al., 1996). The need for management training in the meat industry was noted in the Industry Commission report (Industry Commission 1994, p.196), which stated that abattoir managers had traditionally worked their way up through the abattoir workforce with little, if any, formal management training. Andrewartha et al. (1996, p. 34) also found that meatworks managers were unlikely to use strategic planning in operations. Therefore current meatworks management is examined in the first sub-section to determine the implications for the formulation of operations strategy in meatworks. Three key implications are described in the second sub-section.

5.2.1 Characteristics of Meat Processing

The processes involved in two types of meatworks are described to form a basis for comparing the meat processing industry with other Australian industry. Figure 5.1 shows the processes carried out in an abattoir where livestock is dressed and boned. Dressing involves removing the hide, the head, the viscera and other unwanted body parts. The resultant carcase is then chilled and boned. Removal of bones and membranes and packing into cartons leaves the muscle, or meat, as the finished product from the abattoir.

Figure 5.2 shows the processes carried out in the second type of meatworks, a smallgoods factory, where fresh meat is converted into a range of cooked and cured smallgoods products.

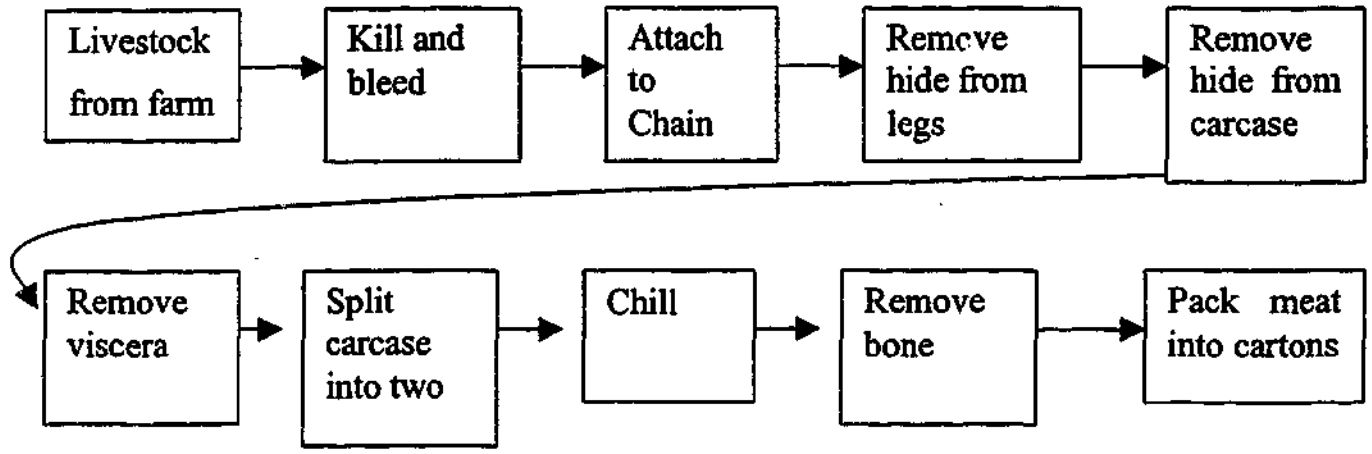


Figure 5.1 Processes in an Abattoir

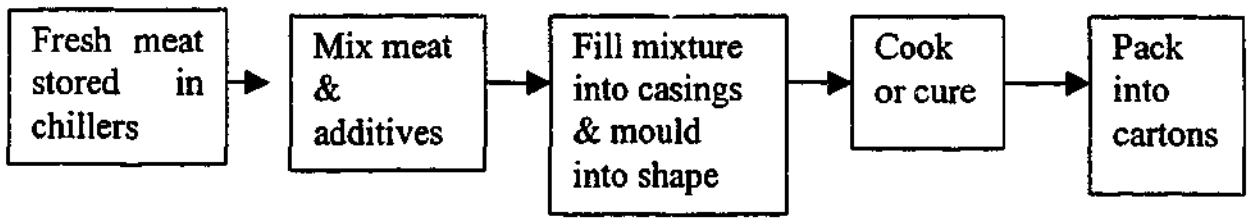


Figure 5.2 Processes in a Smallgoods Factory

The following observed factors are postulated to make the meat processing industry significantly different from other sectors of Australian manufacturing industry, given the processes described above. These factors have been observed during the researcher's visits to numerous Australian meatworks and are stated in Booz, Allen and Hamilton (1993) and Bodi, Maggs and Edgar (1997, p. 57-78).

- the manual content of most work requires intensive physical effort and high skills to achieve three-dimensional cutting on a variety of animal sizes,
- harsh and unappealing working conditions,
- highly perishable product and extreme need for food safety, that is product free from contamination,
- relatively strong development of workforce and relatively less powerful and capable management dictates the hours worked during the week,
- predominantly rural conditions cause rather static workforce, and
- inelastic supply of cattle and meat products due to natural cycles of animals and pasture.

From the list above, food safety is explained because it is an additional customer order winner specific to the meat processing industry. Food safety refers to the protection of food products from contamination and poor storage conditions to help prevent customers from becoming ill when eating meat or other food products. Food safety management is required at every stage in the meat supply chain from abattoir to retailer. 'Between 0.5 and 2.3 million people become ill from food poisoning in Australia each year and it costs millions of dollars in medical bills and lost productivity' (Tegel 1997, p. 5). The over-riding importance of food safety to meat processors is emphasised by '*to guarantee food safety*' being included as one of six strategic imperatives by the Meat Industry Council (MIC 1996, p.1).

5.2.2 Meatworks Management

Australian meatworks have well-defined positions for chief executive, livestock manager (i.e. cattle, sheep or meat purchasing), accounting and finance manager, engineer and marketing manager. However, operations personnel are typically uneducated, narrowly trained and drawn purely from within the meat processing industry. Teaching students from this industry over several years and visiting a large number of abattoirs and smallgoods factories lead the researcher to believe that Australian meatworks can be categorised as follows (refer Andrewartha 1996, p.18; and AUS-MEAT 1997, p.13-16):

- smaller, family-owned, private businesses in which the majority have domestic licences and the minority have export sales licences;
- larger businesses owned by overseas, public companies with export sales licences; and
- smallgoods manufacturing plants, either family- vned or public companies .

This categorisation is taken from the largest twenty-five red mea abattoirs in 1996 (AUS-MEAT 1997, p.13) extended to include smallgoods manufacturers in line with Andrewartha's classification (1996, p.18). It excludes two government-owned abattoirs and two abattoir co-operatives formed by farmers.

The first group, family-owned businesses, is managed in a very 'hands-on' manner by a small group of employees led by the owner(s) who fills positions such as managing director, operations director or sales and marketing director. The use of information systems for management is very limited. Consequently managers in such businesses spend long hours of the working day making numerous decisions on the meatworks floor or on the telephone. Some small meatworks may employ an operations manager. Many of these managers have been observed to spend all their time making tactical and operational decisions at the operating level, with very little time for strategic thinking or policies. Such a business may have a corporate plan, but it will be focussed on obtaining finance with some attention to markets, with very limited consideration of the operations function strategies required to satisfy those markets. The information for both these categories of meatworks comes from the researcher's observations during visits to numerous meat processors whilst teaching managers from that industry, confirmed by observations at the meatworks used in this research.

The second group, large public company subsidiaries, is likely to have a better-developed management structure with an operations manager, human resources manager and quality manager in addition to the positions already listed above. Management is still quite hands-on but formal meetings take place and the hierarchical structure is used for communication and reporting purposes. The management team makes some use of information systems for margin analysis, inventory control and scheduling. Managers of these subsidiaries spend the majority of their time on operational decisions, but they have

some time for attending training sessions and are assisted by the staff managers in areas such as quality assurance, employee training and new product development. Such businesses have a corporate plan formulated annually by a group of three or four top executives. The plan covers markets, finance, profitability and capital expenditure.

The third group, smallgoods manufacturing plants, comprises both family-owned and public companies. Smallgoods meatworks buy boned pork meats and preserve them by cooking and smoking before packing them into customer-ready casings. The larger smallgoods plants are likely to have a well-developed management structure similar to that described for the second group. The smallgoods plant investigated by the researcher was a large subsidiary of a major Australian food processing company. It had hands-on management complemented by numerous formal meetings and used a hierarchical structure for communication and reporting purposes. It had a corporate plan formulated annually by a group of three or four top executives which covered meat supply, sales and marketing channels, finance, profitability and capital expenditure but glossed over operations and other logistics areas. Other parameters of the plant were similar to those in the second group.

A further important dimension of meat processing companies in Australia is their intimate relationship with suppliers of livestock or meat products and with their distribution companies. In many industries materials, components and products can be stored for long periods at low cost. One form of meatworks, the abattoir, relates crucially with its supply of livestock from farmers and feedlots, since stock must be delivered just before the day on which it is to be processed. The abattoir also relates acutely with its customers, since fresh meat products have a life of only five days.

5.2.3 Application of Operations Strategy Concepts

In spite of its postulated difference from other manufacturing industries, it is argued that several operations strategy findings are applicable to the meat processing industry meatworks because the differences examined above are mainly at tactical and operational levels. For example, meatworks are very different from many manufacturing industries in their use of skilled manpower to carry out work with a high manual content requiring

intensive physical effort to achieve three-dimensional cutting. However, the operations capabilities in meatworks, although varying considerably between works, overlap the capabilities of other industries (Andrewartha et al. 1996, p. 21-27). The harsh working conditions are also unlikely to affect operations strategy. The inelastic supply of cattle and the high perishability of meat products are more strategic factors. Inelastic supply is not shared by other industries with supplies at such a level of complexity caused by the use of live animals of various ages and genetic differences. This supply situation is considered likely to create strategic differences between meatworks and other industries (compare Takeno et al. 1999, p. 337-343 who looked at seafood logistics). The perishability of meat products, particularly in the first two groups, separates the meat processing industry from most others.

The first operations strategy concept, Hayes and Wheelwright's (1984, p. 396) four stages of manufacturing strategy evolution (refer section 2.4.3), can be applied to meatworks by changing Table 2.1 into Table 5.1. Table 5.1 shows, for each characteristic identified by Hayes and Wheelwright for each stage, the result obtained for a hypothetical meatworks 'A'. The table is used in Chapters 6 and 7.6 to measure the characteristics for each meatworks investigated and hence judge its probable stage. The hypothetical result suggests that meatworks 'A' is in stage 3, its operations strategy has evolved to the stage 'Internally Supportive'.

The second operations strategy concept considered applicable to the meat processing industry is the use of order winning criteria (OWC) to assist managers to think about their customers' needs before considering the appropriate policy responses (the third area). OWC have been defined in section 2.5.2 and listed in Table 2.2. Table 5.2 lists the OWC used by Hill (1989, p. 26-38) and Platts and Gregory (1992, p. 40) and proposes a set of criteria for use in meatworks. It can be seen that the changes made from Platts and Gregory's work are minor. Such changes comprise rewording, so that meatworks managers can understand them, and addition of an 'Other' category, to assist them to think about extra criteria relevant to their industry.

Stage	Characteristic (abbreviated)	Meatworks A
1	- External experts used - Control Systems to monitor - Flexible and reactive	- No - No - No
2	- 'Industry practice' is followed - Planning horizon is one cycle - Capital investment	- - No - Yes - No
3	- Investments are screened - Changes in strategy translated - Longer-term developments	- Yes - Yes - Yes
4	- Anticipate the potential - Centrally involved - Capabilities in advance	- Yes - No - No

Table 5.1 Application of Hayes and Wheelwight's Four Stages of Manufacturing's Strategic Role to Meatworks (1984, p. 396).

Hill	Platts and Gregory	Meatworks
• Price • Conformance quality • Delivery Speed • Delivery Reliabiiity • Demand increases • Colour range • Product range • Design • Brand image • Technical support • After-sales support	• Delivery Speed • Delivery Reliability • Features • Quality • Flexibility of Design • Volume • Price/Cost	• Delivery Reliability • Features (processing options) • Quality (attainment of specification) • Flexibility of Design (specifications) • Response to variation in volume • Price/Cost • Delivery Speed • Other

Table 5.2 Comparison of Order Winning Criteria

The third operations strategy concept applicable to the meatworks is the choice of 'Content' in the form of Decision, or Policy, Areas within which managers will choose the actions required to define the forward strategy that they require. Many authors have examined the Content of operations strategy (refer section 2.4.2). Table 5.3 compares previous work by the same authors (Hill 1989, p. 28; Platts and Gregory 1992, p. 46) with the Decision Areas considered most appropriate to meatworks. It can be seen that Platts and Gregory have simplified Hill's areas. This work adopts Platts and Gregory's list and

makes changes both to accommodate the meat processing industry and to assist managers to extend the formulation into logistics strategy. When the meatworks managers plan particular tasks in an Action Plan (refer section 5.3 below), these tasks will generally involve one or more of the Decision Areas in Table 5.3. Hence this strategy finding underpins the formal output from the strategic plans, the Action Plans which will be shown to be the most important output from the formulation process.

Hill		Platts and Gregory	Meatworks
Process Choice	Infrastructure		
Alternative processes	Function support	Facilities	Facilities- meatworks
Trade-offs in process choice	Planning & control	Capacity	Capacity
Role of inventory	Quality assurance	Span of Process	Vertical integration
Make or buy	Systems engineering	Processes	Processes and technology
Capacity	Clerical procedures	Human Resources	Human Resources
Size	Compensation agreements	Quality	Quality
Timing	Work structuring	Control Policies	Control Policies
Location	Organisational structure	Suppliers	Producers*/Suppliers
		New products	New product introduction

Table 5.3 Comparison of Decision Areas * Producers means farmers

5.3 Build Model of new Process, SOLP

Construction of the Strategic Operations and Logistics Planning process is described in three sections:

(i) its framework,

(ii) its development, and

(iii) making it operational.

The framework of SOLP discusses its contents and its scope. Development describes the steps required to complete a SOLP process. Operationalisation explains the means used to maximise the acceptability and successful outcome of the process. The SOLP is a modification of the Manufacturing Audit Approach and hence the following builds on the work of Platts (1990, p. 49-66) and Platts and Gregory (1992, p. 29-55). It also uses the findings of the application of the MAA in two Australian companies which are described in Chapter 4.

5.3.1 Framework of SOLP

The content of the SOLP process is to devise a set of actions in structural and infrastructural areas to achieve a set of operations and logistics objectives derived from the business strategy. This determination of actions requires discovering the order winning criteria for each product group, thinking through a strategic vision for operations, and deriving the strategic actions needed to attain this vision.

The scope of the SOLP process is the operations, marketing and logistics functions of a company and its supply chain partners. The scope is attained by field-testing the process with teams of managers in the chosen companies, so that it is possible both to guide the team members and to observe the formulation of strategy. The breadth of the function covered by operations planning was modified to apply to any form of operation in goods, services or maintenance, as well as manufacturing operations. Also operations of the whole supply chain were included since the manufacturing operation, by itself, is not capable of completing the delivery of finished products to end consumers. Part of the scope lies in the ability to tailor the process to each individual company rather than prescribe a rigid process. For example, an 'other' category was added to all worksheets to encourage team members to add their own competitive criteria and policy areas.

5.3.2 Development of SOLP Steps

Each of the steps required in the SOLP process is described in this section. Since the process is tailored to the specific needs of each company, there will be minor changes to these steps in the three applications described in this thesis. Appendix 2 provides copies of each of the worksheets used.

Step 1 is an Assessment of the Market Requirement on a number of competitive criteria for each product family (refer Figure 7.4). It is similar to Platts and Gregory's worksheet 1 (1992, p. 40-41). A set of competitive criteria suitable to the meat processing industry is provided but these are modified if the team so wishes. Extra criteria used in the meat industry included shelf life, food safety and packaging. Each criterion is assessed on a Likert scale from 'not important' to 'essential' by each SOLP team member. The

assessments are based on members' perceptions. Individual assessments are combined into an average for each competitive criterion and distributed to members. Instructions for completing each worksheet are provided on the back of the sheet for all SOLP worksheets. Members place their initials on each worksheet to ensure that all members are represented in the compilations.

Step 2 is the same assessment as Step 1 carried out by individual team members for the Achieved Performance of the Competitive Factors (Refer Worksheet 1.2). The average assessment for Market Requirement compared to Achieved Performance is shown as a graphical illustration of the difference on one result sheet for the criteria for each product family. The existence of differences motivates the team to proceed with the process, as well as starting to identify areas of strategic concern. First Steps 1 and 2 are completed for a single product family. When all product families have been defined in Step 3, Steps 1 and 2 are carried out for the other families. Strategy Charting (Mills et al. 1994, p. 235-40), which charts the development of present operations strategies and their links to business and marketing strategies, can be used as a complement to Steps 1 and 2. Since it has not proved very successful in the meat industry, it is described in the one situation in which it was used (see section 6.1).

Step 3 is the placement of the company's range of products into a number of product families so that all products in a particular family are expected to have very similar operations and logistics strategies and involve similar processes. This step is carried out by the whole team coordinated by the facilitator, producing six to eight product families. This is an additional step arising from the experience at Trico and Engineering Workshops. This experience suggests that managers are not used to thinking about products in groups which have common requirements to win business and hence require similar operations and logistics design and policies.

Step 4 requires Market and Contribution Data to be identified for each product family (refer Appendix 2, Worksheet 2). It is similar to Platts and Gregory's worksheet 2 (1992, p. 38). The worksheet provides information on sales, contribution, market share, market growth and stage of product life cycle so that the product families can be ranked in

present and future importance. This step is important because it focuses team members on the most important product families, since it is rarely possible to plan for all families in a single process. Also it may alert members to the lack of new products in their present range. It is filled in by a director or senior manager outside the team meetings and circulated to team members. Also this step requires the business objectives to be provided for the planning team. In some cases such objectives are already available from the company's business plan. In other cases the chief executive is asked to provide them.

Step 5 assesses which competitive criteria are order winners and order qualifiers (defined in section 2.4.4) for each product family (refer Worksheet 3) to attain the given business objectives. It is similar to Platts and Gregory's worksheet 3 (1992, p. 39). This step identifies the most important market requirements in operations terms. Again the competitive criteria are modified for the meat industry to include shelf life, food safety and packaging. Step 5 is very important in this industry because there has been a tendency to treat meat processing as a generic operation rather than one driven by specific needs of current customers. The worksheet provides a way of assigning relative importance to these criteria by allocating 100 points across them, for each product family, to reflect the criteria which tend to win more orders for the company. Qualifiers indicate criteria in which a certain level must be attained for customers to consider their company as a potential supplier. This method of identifying order winners and qualifiers was developed by Hill (1989, p. 36-37). By filling in these worksheets, the team both identifies the gains which strategy could make and specifies the customer objectives which operations and logistics need to meet. The worksheet is filled in individually by team members, summarised and debated to obtain consensus across the team.

Step 6 is the Determination of the Distinctive Competencies which the company wishes to extend or gain during the period of the plan so that it may have an improved chance of gaining business in future market situations. This step has been found to be difficult to undertake by the teams researched in the meat industry because the whole process is new to them. Consequently they prefer to concentrate on the more concrete issue of meeting customers' known requirements than the abstract concept of distinctive competencies.

Step 7 introduces a requirement to invite one or more major customers to a team meeting half-way through the process. This process was found to be very valuable in the experience with Engineering Workshops. Many operations managers do not meet customers or speak to them. At the team meeting, the customer is asked to say what he/she requires from the company and criticise the product and its delivery, especially in areas affected by operations. Managers are encouraged to ask questions about product acceptance. This face-to-face meeting gives team members an insight and a real appreciation of product acceptance, which is not obtainable by less direct methods. It also enables them to measure the success of their supply chain as seen from the crucial customer perspective.

Step 8 is the estimation of Current Operations Performance on the order winning criteria for each product family (Refer Appendix 2, Worksheet 4). It is similar to Platts and Gregory's worksheet 4 (1992, p. 43). Again the competitive criteria are modified for the meat industry to include shelf life, food safety and packaging. Each team member estimates the current performance of operations and logistics against those criteria by ranking them on a Likert scale between –2 ("Performance gives us a strong disadvantage versus our competitors") and +2 ("Performance gives us a strong advantage compared to our competitors"). This is the same five-point scale that was used in Worksheet 1.1 but expressed as a number rather than as a point on a line. The team is normally divided into two sub-groups for this and the remaining steps to focus on one product at a time. It was found at Trico and Engineering Workshops to be more difficult to get members to fill in worksheets 4 to 8 individually, although this was encouraged. The use of two, smaller groups allows greater input by individuals and enables progress during meetings to be made almost twice as fast because two sub-groups work on separate product families at the same time. Commitment of the whole team to planned strategies is maintained by regular full team meetings to criticise steps completed by each sub-group. An extra part of Step 8, which members are unlikely to address on their first use of this step, is to identify a number of performance measures which would indicate a move towards desired operations and logistics performance.

Step 9 requires current operations practices to be described in ten policy areas and assessed to determine to what extent these practices support the order winners, established in Step 5, for a particular product family (refer Table 5.4). It is similar to Platts and Gregory's worksheet 6 (1992, p. 46). An extra policy area, Distribution, was added for the meat industry. Definitions of the policy areas in meat processing terms (Refer Appendix 2) were provided because experience at Engineering Workshops demonstrated that team members had difficulty in understanding their meanings. This worksheet is important in the meat industry because it compels members to think about the link between the needs of customers and the policy settings at their disposal to meet those needs. Using worksheet 6 (Refer Appendix 2), the key order winners are entered on top of the columns. For example, in the illustrative Table 5.4, 'Q' is put above the column 'Reliability of Delivery' to signify that a qualifying level must be reached for customers to purchase and '30' is put above 'Features (Options)' because that criterion is very important to win orders. Members then briefly describe the policy being pursued for each policy area and, concentrating on these order winners, rank the extent to which that policy supports the particular order winner on a scale from –2 ('Policy is very bad for competitive performance') to +2 ('Policy provides strong support for competitive performance'). Hence the matrix, which at first sight appears very daunting, is partially completed for the most important policy/ order winner combinations. Table 5.4 gives an example of Worksheet 6 completed for the product family Bacon at Bradley Smallgoods Company.

Table 5.4 **WORKSHEET 6** **Initials:___G.S.___**

Assessing the Current Operations Strategy **Instructions overleaf**

Product Family _ Bacon

Policy Area	Current Practice	Order Winners								
		Q 30 Q 35 20								
		Reliability of delivery	Features (options)	Quality - attain spec.	Flex design	Vol. changes	Price/ cost	Packaging	Food Safety	Shelf Life
Facilities (Works)		-1.0						-1.5	-1.0	-1.0
Capacity	Lack of smokehouse capacity									
Vertical Integration	Lack of contact with piggery	1.0		-1.5						
Processes & Technology	Out of date processes with old technology		0.5				-1.0	-1.0		
Human Resources	Good but limited training								0	1.0
Quality	Good product taste and appearance			1.5						
Control **Policies**	*Average, some controls* lacking	*0*								
Suppliers	*Approved supplier* effective but expensive			-1.5			-1.5			
Distribution	*Delivery is effective*	*1.5*							*-0.5*	
New **Product**			*0.5*					*-1.0*		

The manufacturing operation is separated into ten policy areas:

- Facilities: The factories, their number, size, location and focus.
- Capacity: The maximum output of the factory.
- Vertical integration: The extent to which the company is integrated forwards and backwards along the supply chain.
- Processes and technology: The transformation processes (cutting, assembly, etc.) and the way in which they are organised.
- Human resources: All the people-related factors, including those at both the personal and the organisational levels.
- Quality: The means of ensuring that product, processes and people operate to specification.
- Control policies: The control policies and philosophies of manufacture.
- Suppliers: The methods of obtaining input materials at the right time, price and quality.
- Distribution: The movement and storage of product between the company and its end consumers.
- New product: The mechanisms for coping with new product introduction, including links to design.

Step 10 requires members to derive the strategies that are required for each product family using worksheet 7 (refer Appendix 2). It is similar to Platts and Gregory's worksheet 7 (1992, p. 47-48), except that it provides a list of operations and logistics policies for members, whereas Platts and Gregory's worksheet does not. The main weaknesses that caused some policy areas to score low in Worksheet 6 are inverted to identify the required strength. Members then generate some possible actions to solve those problems and choose the alternative action that most suits their desired future position. This is a very valuable step in the meat processing industry as it uses the preceding thinking to identify operations and logistics strategies. Hence members are encouraged to move away from their normal operational decision-making mode to a strategic orientation.

In Step 11 members assemble the actions identified for a particular product family into a time-phased Action Plan (for example, refer Table 6.6) of policies required. Experience at Trico and Engineering Workshops demonstrated that a set of actions, by themselves, is not easy to implement. When those actions are arranged against a time scale to identify the order in which they will be taken, they become quite easy to implement. This worksheet is essential in the meat industry as it provides a working document used frequently during implementation, well after other worksheets have been abandoned. It is useful to have one team member responsible for the Action Plan for each product family. That member is responsible for drafting and for presenting the Action Plan both to the team and to senior management. Again, as in Steps 8 to 10, the team is normally divided into two groups for this step.

Step 12 is a brief Strategy Description, comprising one or two paragraphs, which states the rationale for actions proposed for a particular product family. Strategies require change as time goes by. The aim of the strategy description is to explain the situation which the strategy addresses and the assumptions made. Such a description was first used at Trico.

Two omissions are worthy of note. The MAA Worksheet 5 (Opportunities and Threats) was not used in SOLP to identify opportunities and threats to operations in the future. This worksheet was found to take the team out of operations planning into business strategy issues, and the wider results generated were not very helpful. Case studies and prior examples of completed worksheets were not used in the meat processing industry because the ones available were not sufficiently relevant to that situation.

5.3.3 Making the SOLP Process Operational

This section describes the means of operationalising the SOLP process using the headings provided by Platts (1990, p. 62-66): the point of entry to the company for the process, the procedure to be followed and the support provided for this procedure, participation in the planning team, and management of the planning process.

Point of entry to the meatworks SOLP processes was a conversation with the operations manager or a company director. The benefits of the SOLP process to the meatworks was explained to the manager. Six firms were initially contacted, leading to three at which the process was used. In some cases a presentation was made to a number of senior executives. Acceptance was occasioned by the attraction of melding all existing operations programmes into one plan focussed specifically on the needs of customers; and by the timeliness of the proposal relative to events within the meat processing company. Rejection occurred because either the chief executive believed his forward vision was complete or because the timing was not appropriate to the company's priorities.

The procedure adopted and the support provided for each step in the planning process were key drivers for developing successful operations plans. The overall procedure was Action Research, discussed in section 3.2.1, in which the researcher carried out his studies interactively with the planning team. Acting as an external facilitator gave the researcher a natural reason to be present at each meeting of the team. The use of an external facilitator is considered to be necessary for the SOLP process because he, or she, understands the process of operations strategy formulation and can both coach team members and tailor the process to particular needs. Also the facilitator is able to create more autonomy between team members, so that novel solutions can be generated and explored.

The support in the form of generic worksheets, embodying the methodology but able to be amended for individual companies and industries, is considered critical to the success of the process. Whilst strategic operations planning is predominantly a process of thinking, its success is considered quite unlikely without the aid of worksheets to make the process easier for members. A further minor, but useful, aid is the name 'Game Plan' to communicate the overall purpose to team members. Almost without exception, meatworks team members had no prior experience of strategic planning for operations and these words, themselves, were found to be too abstract. The process of SOLP was therefore described as being similar to making a game plan to assemble the overall

picture of where one wanted to go. This concept was immediately understood by team members and therefore it was adopted.

Choice of the managers who take part in the planning team varies from one company to another because it depends upon the organisational structure and the particular people in each company. Unlike the Manufacturing Audit Approach (Platts and Gregory, 1990, p.23), team members are not at director level. Generally they are managers with one or two directors included. Team membership was normally decided by the operations manager or director in consultation with the researcher before the process started. The process works best with 7-8 members, although a team of twelve has been successful in one company. Essential members are:

- Operations Manager or Director
- Marketing or Sales Manager
- Two more managers in the operations field
- Purchasing or Livestock Manager
- Quality Assurance Manager

Possible members come from the following functions:

- Controller
- Engineer
- Research and Development Manager
- Warehouse Manager
- General Manager
- Managing Director

It is very important for the operations manager's superior to be closely involved. It is useful for him to be a full member of the team, although it is sufficient if he attends parts of meetings and is kept informed of progress and results. A range of operations managers were involved representing key parts of the process, and senior supervisors reporting to the operations manager.

An important part of participation is the use of group consensus throughout the process. Inevitably some members have more power or more to contribute than others. This must

not detract from the feeling that each member is contributing and is responsible for the final strategy. Hence there is an emphasis on filling in worksheets individually, especially at the start of the process. Later in the process, when the steps are too involved for most members to want to make a separate contribution, the team is split into two groups. Work by each group is reported back to the whole team and amendments made where required.

A further element of participation is the attendance of members on time for the whole of each meeting. Care was taken to arrange dates which were suitable for all members. In most cases attendance was then very high, given the Chief Executive's endorsement of the process. The facilitator has a duty to provide guidance and stimulation at the start of the process. Later, the process gains a life of its own because members are very interested in the outcomes.

Project management comprises the manner in which the team tackled all the steps required to complete the SOLP process. Meetings usually lasted two hours at fortnightly intervals. The facilitator provided an agenda for each meeting, but largely the process steps, described in 5.3.2 above, provided an agenda. The extent of work done by team members outside meetings was quite small in meat industry cases. After the team had built up an understanding of the process and a significant stake in the outcomes, a six-hour meeting was held to speed process completion. Typically this long meeting takes place off-site to remove the distractions of the normal working environment.

5.4 Propositions to Test the Effectiveness of the New Process

The Manufacturing Audit Approach used review questions answered during each meeting to gauge its effectiveness. In this research, more detailed information about members' reactions to the SOLP process was required to test the hypotheses set out above. It was therefore decided to carry out a structured interview with each member at the start and the end of the process which would measure their reactions to the process and their understanding of strategic operations.

The hypotheses are not able to be tested by straight questions to team members. Hence a number of concrete propositions, which would permit the research hypotheses to be

tested, were derived. Answers to these propositions were then obtained by the responses to questions posed to team members in individual structured interviews and by responses to further questions posed to two senior members of each team at least six months after the end of each SOLP process.

The propositions were derived by the researcher thinking about the work life of the team members and identifying elements which, if communicated, would answer (to a greater or lesser extent) the research hypotheses. Figure 5.3 shows how four propositions obtain information which tests the third research hypothesis. For example, consider proposition four 'Formulation of a strategic plan requires an external facilitator'. Since SOLP uses a facilitator, if team members consider that an external facilitator is essential for operations planning, this fact supports the overall hypothesis that SOLP has been operationalised. Similar arguments apply to the other three propositions. The 'other support' box recognises that there will be other hypothesis-testing information from the running of the SOLP process. Table 5.5 shows all the propositions generated and their links to the five research hypotheses.

The further link from propositions to individual questions in the interviews (refer Appendix 3) is described in Table 5.6. In some cases the basic data is provided by observations during the SOLP process, by worksheets completed in the process, or by results obtained after the process.

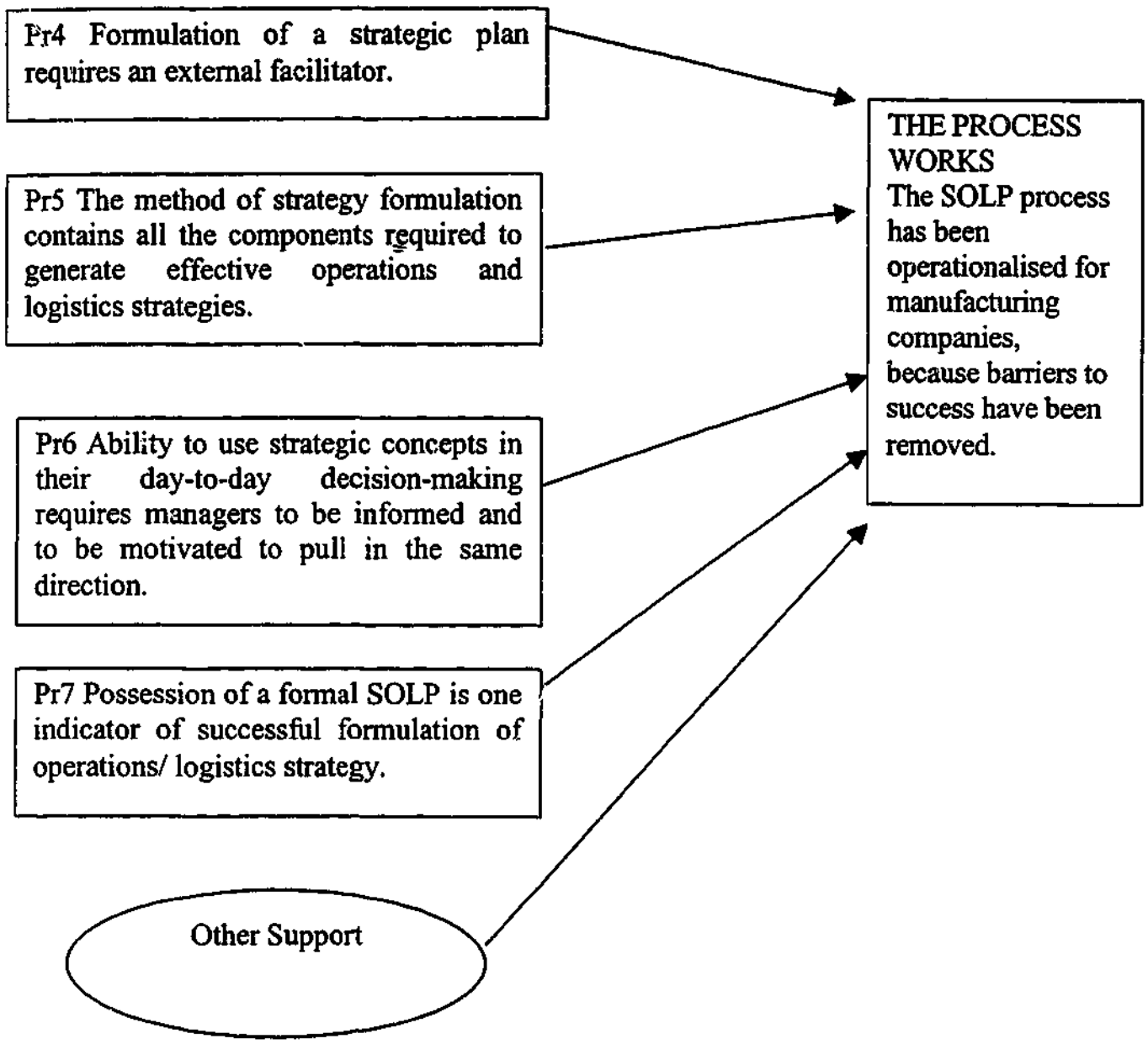


Figure 5.3 Example of link between propositions and one research hypothesis

Hypotheses	Link to	Propositions
H1. The SOLP process can be applied effectively to the meat processing industry, which has some significant differences from other manufacturing industries.	**Pr1, Pr2, Pr3**	**Pr1** Effective SOLP contributes to improved strategic decisions and actions, at business or operating levels.
		Pr2 Improved management performance is indicated by managers' own views and by attainment of operational targets leading to improved business performance.
		Pr3 Implementing SOLP leads to observable results.
H2. The SOLP process has been operationalised for manufacturing companies, because barriers to success have been removed.	**Pr4, Pr5, Pr6, Pr7**	**Pr4** Formulation of a strategic plan requires an external facilitator.
		Pr5 The method of strategy formulation contains all the components required to generate effective operations and logistics strategies.
		Pr6 Ability to use strategic concepts in their day-to-day decision-making requires managers to be informed and to be motivated to pull in the same direction.
		Pr7 Possession of a formal SOLP is one indicator of successful formulation of operations/ logistics strategy.
H3. An extended MAA process (SOLP) effectively links operations and logistics into a complete functional strategy.	**Pr7, Pr8**	**Pr8** SOLP produces a complete functional strategy which combines operations and logistics.
H4. The SOLP process contributes to improved strategic decision-making by improving strategic actions of the managers involved.	**Pr3, Pr9, Pr10, Pr11, Pr12**	**Pr9** Preparation of a strategic plan is not an end in itself: it is a step on the road to strategic operations management
		Pr10 SOLP leads to an advantage over competitors through improved operations performance.
		Pr11 Managers need to have a long-term orientation to take strategic initiatives.
		Pr12 Operations/ logistics strategy must be communicated throughout management (often expressed as throughout the organisation) in order to make a difference in performance.
H5. Action Research provides an approach which engenders an effective SOLP process.	**Pr2, Pr3**	See above

Table 5.5 Propositions and their links to Research Hypotheses

Links between Propositions and Interview Questions	
Propositions	***Interview Questions***
Pr1 Effective SOLP contributes to improved strategic decisions and actions, at business or operating levels.	Q6 What have you achieved by means of the strategic planning process? Q6a Has strategic management improved? Q6c Have you taken any actions as a result [of SOLP]?
Pr2 Improved management performance is indicated by managers' own views and by attainment of operational targets leading to improved business performance.	Q6a Has strategic management improved?
Pr3 Implementing SOLP leads to observable results.	None.
Pr4 Formulation of a strategic plan requires an external facilitator.	Q15 What areas of the work done were helpful? Q16 What areas covered were not helpful? Q17 What should the facilitator have done to improve meetings?
Pr5 The method of strategy formulation contains all the components required to generate effective operations and logistics strategies.	Q16 What areas covered were not helpful? Q21 Would you like to make any other comments about strategic planning for 'Company A'?
Pr6 Ability to use strategic concepts in their day-to-day decision-making requires managers to be informed and to be motivated to pull in the same direction	Q6 What have you achieved by means of the strategic planning process? Q6b Do you feel closer to other members of the management team?
Pr7 Possession of a formal SOLP is one indicator of successful formulation of operations/ logistics strategy.	None.
Pr8 SOLP produces a complete functional strategy which combines operations and logistics.	Q11 Will you make any new contacts with supply channel partners? Q12 What contacts with outside organisations will you now make? Q13 Are other members of the meatwork's supply channel important to your job?
Pr9 Preparation of a strategic plan is not an end in itself: it is a step on the road to strategic operations management.	Q20 Would you be interested in personal development in strategic management? Q20a What do you wish to be addressed?
Pr10 SOLP leads to an advantage over competitors through improved operations performance.	Q18 Has the strategic planning improved your performance?
Pr11 Managers need to have a long-term orientation to take strategic initiatives.	Q18 Has the strategic planning improved your performance?
Pr12 Operations/ logistics strategy must be communicated throughout management (often expressed as throughout the organisation) in order to make a difference in performance.	Q6b Do you feel closer to other members of the management team?

Table 5.6 Interview Questions to provide evidence for Propositions

5.5 Conclusion on SOLP for Meatworks

In numerous ways, the Manufacturing Audit Approach has been changed into the Strategic Operations and Logistics Planning process. Important changes are the adoption of a longitudinal process, an increase in the scope of the plans to include the internal logistics function, and provision of a new 'Action Plan' worksheet which sets required strategic actions against a time scale. The success of this amended process is investigated in three meatworks because they are found to lack planning skills in operations and logistics areas.

Twelve propositions are derived to act as an intermediate stage between the research hypotheses and the responses to interview questions. The next chapter describes application of the process in two meatworks.

CHAPTER 6

APPLICATIONS OF SOLP AT TWO MEATWORKS

"Michelangelo had always searched for the moment of Decision, which was for him the eternal womb of truth." (Stone 1961, p. 700).

Phase 3 of the research comprises application of the Strategic Operations and Logistics Planning process in two meat processing plants before it was modified to take account of integrated supply chain implications. For each application, the company used is described, the planning process is outlined in the order in which meetings took place and the process results, obtained from observing the workshops, are summarised. Next the results from interviewing team members are provided in two sets. The first set contains the responses from interviewing each member at the start and end of the SOLP process. The second set contains responses from interviewing two senior managers from each company at least two years after the end of the process.

6.1 Flock

The first application of SOLP was at a company in the meat processing industry and is referred to as 'Flock' for reasons of confidentiality. It is a family-owned company located in Victoria, which employs approximately 230 people and had an annual turnover of $A95 million in 1996.

Flock is a red meat abattoir, purchasing cattle and sheep, killing and dressing them and selling the carcases to a range of domestic customers. Figure 5.1 shows the manufacturing processes carried out in abattoirs. Up to 100 cattle carcases per day are boned on the premises and sold as boxed beef. Co-products comprise offal, hides, tallow and bone meal, which are sold to respective manufacturers. The abattoir has the capacity to process 600 cattle and 4,000 lambs per day. The abattoir operates one day shift, five days per week. Workers operate under an enterprise agreement with the Australian Meat

Industry Employees Union. Other than the overhead chain conveyor system which moves carcases from one work station to the next, operations are primarily manual with three-dimensional cutting performed by about forty slaughtermen on the beef line. The dressing process is very difficult to automate due to a wide variety of sizes and breeds of animal, dynamic changes to the carcases during dressing and a hostile working environment. Quality, food safety and delivery reliability are key requirements for success. Flock also has a smallgoods subsidiary company, but this is not included in the strategic planning work.

Flock has a strong reputation for business integrity and fair dealing in an industry in which many firms lack these characteristics. Flock is a leader amongst Australian meatworks in its attention to quality and its training of employees. The company is tightly controlled by the Managing Director and part-owner who is heavily involved in the day-to-day running of the operations, leaving little time for strategic planning. No formal strategies exist, although the Managing Director has a clear vision of where the company should be going in the future and has been making ad-hoc decisions to move the company forward.

Managers at Flock have a distinctive style in their daily duties. They start at 6am every morning and chase a never-ending series of tasks, which can be typified as fire-fighting. Several of them are on the mobile phone every few minutes, even if they are on-site or in a planning meeting. Flock has recruited senior managers from outside the meat industry into engineering and finance positions.

Flock is currently operating at a lower cost level because of its restriction to domestic sales. These sales can only be significantly increased by exports, but a licence to export requires substantial extra costs for government-employed inspectors and veterinary surgeons.

This company was chosen because it is seen as a leader in the Australian meat processing industry. It was the first abattoir in Australia to gain ISO 9002 accreditation, in 1995. The researcher held an initial meeting with the Managing Director, the Executive General Manager and the Financial Controller. Strategic Operations and Logistics Planning and

the work involved in developing the operations strategy were discussed and the potential benefits to the organisation from this industry-academia collaboration were highlighted. The Managing Director asked the researcher to discuss the process in more detail with the Financial Controller. This was well-received and Flock decided to proceed with a preliminary meeting to see whether the management team would be prepared to carry out the whole process.

The top management team was requested to commit to the project and to allocate time to work with the facilitators in developing the operations strategy for Flock. There would be two facilitators, the researcher and his supervisor. The commitment was to be in the form of a series of two-hour meetings during which the top management team, facilitated by the researchers, would complete the worksheets required by SOLP for a number of product families. Seven meetings were conducted at Flock over a period of four months. The seven senior managers involved in these meetings represented all functional areas of the organisation, as shown in Figure 6.1:

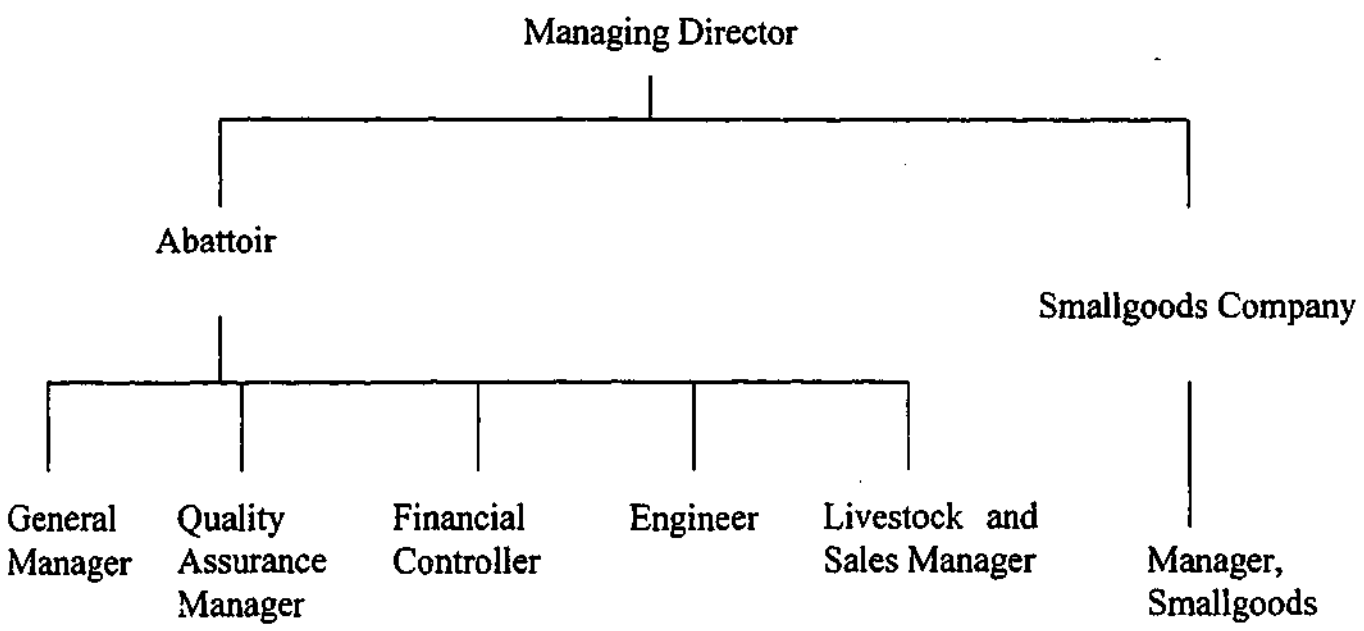


Figure 6.1 Organisational structure of Flock

6.1.1 SOLP Planning Process at Flock

The facilitators guided the management team in completing each worksheet. Where necessary the facilitators provided an explanation of the purpose of the worksheets and the terminology used. A set of worksheets with examples was prepared to help the team understand the information required. An "other" category was added to all worksheets to prevent headings being restrictive. Meetings were held in a dedicated training centre at the Flock meatworks.

In addition to the work completed during the two-hour meetings, the management team was requested to complete similar worksheets for other product families and to collect and analyse necessary data. The facilitator analysed responses from individual members and relayed results back to the team at the next meeting.

The seven team meetings held are now described. Table 6.1 summarises the key areas covered at each of the meetings.

At the first meeting, the researcher explained what strategic operations planning involved and the role that the facilitators would play, as experts on the planning process but leaving *content* of the strategies to team members. A strategy chart (described in section 2.5.4; refer Mills et al. 1994) was commenced, to indicate how Flock had derived its operations strategies over the past several years and how the actual strategies related to business objectives. Each team member was asked to assess the level of market requirements for a number of competitive criteria for one family of products, Beef Carcase. A significant part of the first meeting was taken up with providing motivation and enthusiasm for the team to get fully involved in the SOLP process. The profiles of market requirements and achieved performance against those requirements were an important part of that motivating process.

Before the second meeting, two weeks later, the two facilitators interviewed each team member about his degree of understanding of strategic operations. At the start of the second meeting, the profile of achieved performance compared to market requirements for one product family was reported to team members. They were interested to see how

Meeting	Items Covered
Pre-meetings	Three meetings were held with Managing Director, Executive General Manager and Financial Controller
1	• What is strategic planning? • Role of facilitators • Strategy Chart • Profiles for one product family • Agenda and administration for later meetings
2	• Examine profile for one product family • Tailor criteria to company • Grouping of products
3	• Receive business objectives and discuss strategic vision • Profiles for three product families • Receive Strategy Chart • Order Winning Criteria
4 (Longer meeting)	• Product market and turnover data • Order Winning Criteria (continued) • View of export • Talk to a customer to find out what his boning room wants • Choose two most important product families • Assess Current Operations Performance for those two families • Start WS6 and 7 for two product families
5	• Customer visit. For two product families, Boxed Beef and Small Stock Carcase: • assess Current Strategy • derive strategy • Action Plan
6	• Determine distinctive competences For two more product families, Hides and Beef Carcase: • assess Current Strategy • derive strategy • Action Plan
Steering	Agreed with Managing Director that researcher would provide first draft plan for four product families.
7	• Team accepted action plans and strategies for four product families, after vetting by team members.

Table 6.1 Items covered at each meeting at Flock

Flock, according to these perceptions, achieved the customer-requirements on some criteria but not on others. Members were worried that each had different views of what each criterion meant. This started a vigorous discussion which led to some changes to the criteria used for their business. Work was done on grouping products to see how Flock's product range could be expressed as a limited number of such product families. This required some time, as it was a novel concept to members. Eight product families were identified and four of those were chosen as the most important ones to study (refer Table 6.2).

• Beef Carcase*	• Offal
• Hides*	• Boxed Lamb
• Small Stock Carcase*	• Rendered Product
• Boxed Beef*	• Boxed Beef - Export
* indicates the most important product families	

Table 6.2 Product Families at Flock

The third meeting took place one week later. Because Flock did not have a business plan, the Managing Director was asked to speak to his vision of where the business should be heading. He cited increased throughput, generation of profit and wealth, increase of further processing facilities, moving into export markets and working with logistics partners, such as livestock producers and supermarkets, as the most important goals in his vision. Team members discussed this vision. Summarising work done by members since the last meeting, the profile of achieved performance compared to market requirements for three more product families was reported to team members. Work on the strategy chart, started in the first meeting, was considered. Members were interested in the chart but did not see it as relevant to their planning. The Order Winners Worksheet, number 3, was introduced to members. The competitive criteria and the method of assigning scores to each product family were explained. Members were asked to fill in the sheet before the next meeting.

The fourth meeting, one week later, was a longer meeting, lasting six hours. This was done because the team had built up motivation for the formulation task and had sufficient understanding to progress quite quickly. A public holiday was chosen as the most suitable date. The Managing Director presented market share and proportion of Flock turnover for

each product family. The order winning criteria were reviewed for all product families, working in two groups. Since the future ability of Flock to export has a major impact on its planning, a special discussion on export sales took place. The facilitator kept the Managing Director out of the discussion, to enable a more democratic input. The Managing Director then summarised the views, agreeing that boning room and chillers would be prepared for export, but actual export business would await opportune government regulation. Current Operations Performance was assessed individually by team members for Small Stock Carcase and Export Beef Cartons.

The owner of a boning room which purchased a major part of Flock's Beef Carcase sales spoke to the team, explaining what product he required from Flock and the extent to which their despatches met that need. Major concerns highlighted were price and meat temperature. The ensuing discussion had a tendency to examine short-term rather than long-term problems. The facilitator then attempted to show how strategic events fitted together on the strategy chart, leading from business objectives through marketing to manufacturing. This was not very helpful to the group. The next task was the completion of Worksheet 5, Assessing External Opportunities and Threats, which was done by the team as a whole.

The team was split into two sub-groups by assigning the two most senior managers intc separate groups and randomly allocating the other managers between the groups. These sub-groups then completed Worksheet 6, Assessing Current Strategy, for two product families. Members had difficulty understanding the meaning of operations policy areas, so an explanatory sheet was prepared for the next meeting. Soon afterwards the Strategy Derivation worksheet was introduced, since the act of thinking about strategy can help assessment. Slow progress was made on this task. The meeting finished at 1pm when members felt that they now knew what to do and could finish these worksheets by themselves.

At the fifth meeting, two weeks later, the facilitator explained the need to prepare Action Plans to put actions into the right time sequence and for performance measures which would help Flock management judge whether it was moving in the right direction

towards its strategic goals. Working in two groups, the team proceeded to complete the Assessing Current Strategy and Strategy Derivation worksheets for two product families. The General Manager tended to lead the Boxed Beef group and the Managing Director led the Small Stock Carcase group. After ten minutes, the facilitator introduced the Action Plan worksheet. Concentration was frequently interrupted by the Livestock and Sales Manager taking mobile phone calls. The resulting worksheets 6, 7 and 8 for both product families were circulated, presented by a group member to the team, and discussed. The facilitator summarised the meeting and foreshadowed the need to agree on other important product families, follow them through to Action Plans and then implement all four plans.

At the sixth meeting, two weeks later, team members voiced despondency about the state of the meat industry because a Victorian firm had been put into receivership and they believed the market was in disarray. The value of having distinctive competencies in serving customers, not easily copied by competitors, was discussed. The Assessing Current Strategy, Strategy Derivation and Action Plan worksheets were completed for two more product families, Hides and Beef Carcase. As previously, each group reported its findings back to the whole team.

It was planned to hold a further meeting a week later but this was cancelled by Flock due to pressing short-term engagements. Due to the absence of the facilitator on an overseas visit, there was a break of three months before more work was done on Flock's strategic operations plan. A meeting was held between the facilitators and the Managing Director. He confirmed that he was very keen to have a set of plans; their lack is "a major weakness". Other issues discussed included the need for a human resources manager, the difficulty to get older process workers to accept change and the extent to which the Managing Director delegates. It was agreed that the facilitators would provide a draft plan for each of the product families, which would then be vetted by nominated team members and would lead to a meeting of the whole team in a month to agree or vary the plans.

The researcher wrote a one-page description to explain the Action Plan for each of the four product families for which operations strategy was crafted. These plans were submitted to the nominated individuals at Flock who, with one exception, made very little change. The Financial Controller, who had previous business auditing experience and who was studying for an MBA degree, spent some time rewriting the draft plan for Boxed Beef, both putting it into his own words and making it more suitable to the internal climate in the Flock company. The final, bound document had the following contents:

- Summary
- Strategic Vision for Flock
- Market Data by product family
- Order Winning Criteria for all product families
- Operations Plan and Action Plan for
  - Beef Carcase
  - Hides
  - Small Stock Carcase
  - Boxed Beef

A final team meeting was held six weeks after the steering meeting. The edited, assembled plans were presented to team members. A lively meeting resulted in all plans being accepted and a resolve by the members to proceed with the capital expenditure necessary to improve boning and chilling facilities.

Exit interviews were carried out by the facilitator with each team member to find out how their views of strategic planning had changed and to examine their response to the SOLP process. Over two years later, the facilitator interviewed the Managing Director and the Financial Controller to obtain a view of the SOLP process after sufficient time for the planned strategies to be implemented. These interviews used a set of questions framed to obtain their views on the research propositions. Appendix 5 gives a full list of these additional questions. The responses are given in section 6.4.

6.1.2 Process Outcomes at Flock

Application of the Strategic Operations and Logistics Planning process resulted in a number of research outcomes for the Flock meatworks. The outcomes, which are addressed in turn, are:

- development of Order Winning Criteria,
- observation of important Decision Areas,
- estimation of operations strategic role, and
- Action Plans and business outcomes.

6.1.2.1 Order Winning Criteria

Using the theory developed in section 5.2.3, this sub-section describes the Order Winning Criteria (OWC) used by the Flock team. Table 6.3 compares the OWC used in the MAA (Platts and Gregory 1992, p. 40) with those used by Flock. The comparison shows that the Flock team used similar OWC to the MAA but with these differences:

- Delivery Speed was omitted because, given the perishable nature of the product, team members believed that they were achieving exactly the delivery speed required by their customers;
- An 'Other' category was supplied in the SOLP process. The stimulus of this category caused the Flock team to add 'Relationship Building' as a logistics criterion; and
- Several of the OWC were reworded to assist meatworks managers.

Platts and Gregory	Flock
• Delivery Reliability • Features • Quality • Flexibility of Design • Flexibility of Volume • Price/Cost • Delivery Speed	• Delivery Reliability • Features (processing options) • Quality (attainment of specification) • Flexibility of Design (specifications) • Response to variation in volume • Price • Relationship building • Other

Table 6.3 Comparison of Order Winning Criteria between Flock and the MAA

6.1.2.2 Decision Areas

Applying the Strategy content concepts developed in section 5.2.3, a number of Decision Areas were used to provide the policy dimensions needed by managers when choosing operations strategy actions. These choices were then recorded in the Action Plans. Table 6.4 shows that the Decision Areas used by Platts and Gregory (1992, p. 46) were used in Flock with minor changes and the addition of 'Distribution' as a logistics area. To accommodate the specific needs of the meat processing industry, a set of Decision Area definitions was developed (refer Appendix 2). The third column in Table 6.4 shows the number of times each Decision Area was used across the four Action Plans derived by the Flock team. The most prevalent Areas are facilities, human resources, and producers/ suppliers.

Platts and Gregory	**Flock**	
	Area	*No. +*
Facilities	Facilities (Works)	7
Human Resources	Human Resources	6
Suppliers	Producers*/ Suppliers	7
	Distribution	4
Processes	Processes and Technology	3
Span of Process	Vertical integration	3
Capacity	Capacity	2
Quality	Quality	2
Control Policies	Control Policies	0
New products	New product introduction	1

Table 6.4 Comparison of Decision Areas between Flock and the MAA

* Producers means farmers
\+ Column indicates number of proposed actions in each Decision Area across all four Action Plans

6.1.2.3 Operations Strategic Role

The researcher's observation of each team meeting led to a classification of the stage of evolution of operations strategy (Hayes and Wheelwright 1984, p. 396-401) at Flock using Hayes and Wheelwright's strategy characteristics (refer Chapter 5, Table 5.1).

Using this privileged situation, the researcher assessed whether Flock demonstrated each characteristic. This relative assessment was confirmed by comparison with his assessment of the other two meatworks (refer sections 6.2.2.3 and 7.6.1.3). Table 6.5 gives the results of that assessment for Flock which implies that Flock was between stages 2 and 3, that is between 'Externally Neutral' and 'Internally Supportive'.

6.1.2.4 Strategies, Action Plans and Business Outcomes

Comprehensive but concise strategies were derived for four families of products, covering the bulk of Flock's business. Each strategy comprised a statement of Order Winning Criteria, the problems found with current operations, the strategic vision placed in context and the Action Plan required to achieve that vision, expressed as the actions

Stage	**Characteristic** (abbreviated)	**Flock**
1 Internally Neutral	External experts used Control systems to monitor Flexible and reactive	No No Somewhat
2 Externally Neutral	Industry practice is followed Planning horizon is one cycle Capital investment	No, better Yes, or better Yes
3 Internally Supportive	Investments are screened Changes in strategy translated Longer-term developments	Yes Probably Yes
4 Externally Supportive	Anticipate the potential Centrally involved Capabilities in advance	Somewhat Not as such No

Table 6.5 Assessment of Characteristics of Strategy Evolution for Flock

required in each operations and logistics policy area arranged in time sequence over the next three years. These plans were compiled into a planning document, 'Strategic Operations Plan for Flock (Abattoir),' described above. Table 6.6 provides an example Action Plan (for Boxed Beef). The Action Plans are considered to be the most important output from the formulation process for the company.

Table 6.6 **WORKSHEET 8** Initials: _____

FLOCK ACTION PLAN

Product Family: **Boxed Beef**

Policy Area	Year 1				Year 2		Year 3
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Jan-Jun	Jul-Dec	
Facilities (Meatworks	Capital estimation	Plans, specs and tender	Commence building		Commence production		
Capacity							
Vertical Integration							
Processes & Technology							
Human Resources				Recruit	Train	Continuing Development	
Quality							
Control Policies							
Suppliers (P,A,B)	Decide marketing	Implement strategy	Refine and develop				
Distribution	Benchmark research	Evaluate and order			Implement new vehicles		
NewProduct introduction							

The SOLP process enabled the Flock team to take a major capital expenditure decision, to build extra boning and chilling facilities in new buildings. Five months later the Managing Director stated his opinion that the SOLP process had crystallised the decision to build extra facilities. Consideration of such a course of action had been part of individual managers' thinking for some time but the process had been responsible for a consensus emerging for the development to proceed. He stated that the process "creates an awareness of issues and problems; and educates team members." (Managing Director, 1997). In his view there was a new awareness of the issues in increasing the production of Boxed Beef and an awareness of the need for education and training. This issue is covered further using the outcomes of interviews two years after the SOLP process (refer section 6.4). This concludes the process outcomes at Flock.

6.2 Wilson

The second meatworks application of SOLP was undertaken at 'Wilson', a private company located in Gippsland, Victoria. Wilson has been operated by a family business for fifteen years; it employs 70 people and has an annual turnover of approximately $A17 million. Wilson is a red meat abattoir, purchasing cattle and sheep, killing and dressing them and selling the carcases to a range of domestic customers. Figure 5.1 shows the manufacturing processes carried out in abattoirs. About ten percent of livestock is obtained from family grazing properties. Ten cattle carcases are boned on the premises per day and sold as boxed beef. Co-products comprise offal and hides, which are sold to respective manufacturers. The abattoir has a capacity of 220 cattle and 900 lambs per day. The abattoir operates one day shift, five days per week. It has two slaughter floors which are predominantly operated on separate days of the week. Workers operate under an enterprise agreement with the Australian Meat Industry Employees Union. Wilson's beef line uses a gravity rail and cradle dressing (i.e. the carcase is laid on its back on a cradle for the leg release tasks) from the start of the line until the hide is removed and then an overhead chain conveyor from that point to the end of dressing. Operations are primarily manual with three dimensional cutting performed by eighteen slaughtermen on

the beef line. Quality, attention to customer requirements and delivery reliability are key requirements for success.

Wilson is a venture into meat processing by a grazing family in an effort to control the terms obtained for their livestock sales and to create jobs in a rural area. The meat processing arm of the company is controlled by two brothers who respectively look after production and marketing/sales. Even more than with Flock, day-to-day running of the business is a full-time occupation for the owner/operators, and strategic planning has been limited to marketing and financing considerations. In marketing, an individual approach to branded product has been taken so that sales can be made to prestige butchers and independent supermarkets. A five-year Business Plan was compiled in late 1995 to assure the company's bank that its loan would be progressively repaid. This plan concentrated on market stance and predicted financial returns.

Mangers at Wilson have an extremely hands-on orientation, with limited education in management skills and little appreciation of the value of information systems and planning. They work very hard for long hours. Wilson is restricted to domestic sales and has some beef processing equipment which is considered out of date by other companies in the industry.

Wilson was chosen because of its novel approach to meat marketing and its excellent reputation with farmers in its local area. It was also chosen because it was interested in being involved in strategic operations planning. Approaches to two larger overseas-owned meatworks were unsuccessful.

The researcher held an initial meeting with the Sales and Marketing Director during the absence overseas of the Operations Director. Strategic Operations and Logistics Planning and the work involved in developing the operations strategy were discussed and the potential benefits to the organisation from this industry-academia collaboration were highlighted. The Marketing Director agreed that he wanted a SOLP process to further develop the existing Corporate Plan. Members of the team were chosen and a date for a first meeting was set.

The management team was informed that the SOLP process would be undertaken, with the researcher and a colleague acting as facilitators, in developing the operations strategy for Wilson. The commitment was to be in the form of a series of two-hour meetings during which the management team would complete seven worksheets required by SOLP for a number of product families. Seven meetings were conducted at Wilson over a period of four months. The eight managers and supervisors involved in these meetings represented many functional areas of the organisation, refer Figure 6.2.

6.2.1 SOLP Planning Process at Wilson

The planning process at Wilson was very similar to that at Flock. Two facilitators trained the Wilson team in the process and assisted them to complete each worksheet. Meetings were held in an office at the meatworks at the end of the working day. There were problems of attendance because the Operations Director was not available until meeting four and the plant foreman resigned (coincidentally) after attending the first meeting. An extra production supervisor, from the boning room, attended the last meeting. Team

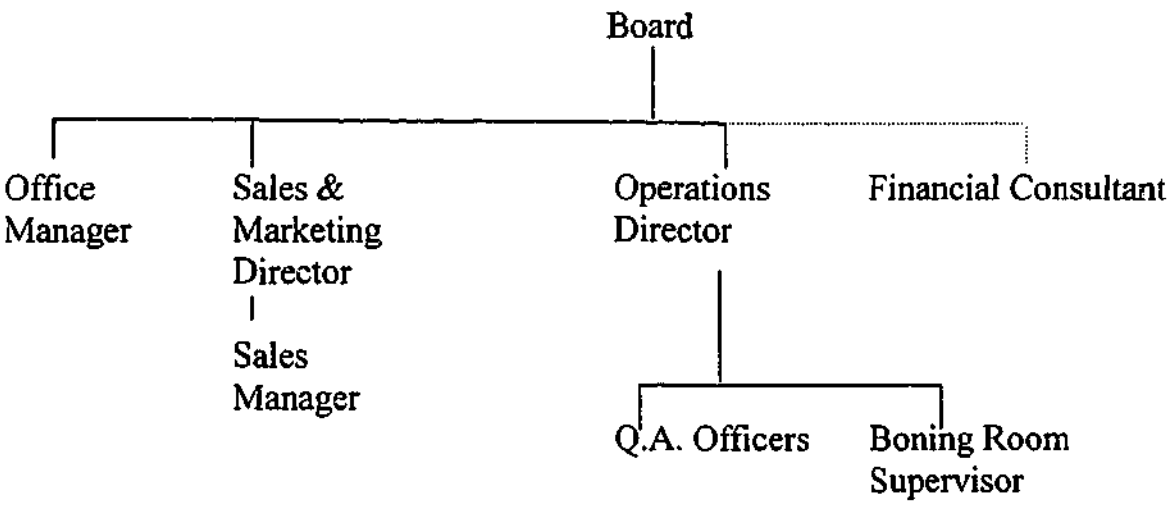


Figure 6.2 Organisation Chart for Wilson

members struggled with some of the concepts presented and were not able to fill in worksheets between meetings.

The seven team meetings held are now described. Table 6.7 summarises the key areas

Meeting	Items Covered
Pre-liminary	• Held with Sales and Marketing Director
1	• What is strategic planning? • Sales director explained what Wilson's corporate plan contained • Facilitator was asked about the effect of chilling on meat taste • After discussion, members agreed that a plan was needed • Profiles for one product group
2	• Examined profile for one product group • More work on profiles • Derived list of product families • Started worksheet 4, Order Winning Criteria • Arranged for Market Share and Contribution information
3	• Completed Order Winning Criteria • WS 4, Current Operations Performance • WS 6, Current Operations Strategy by Policy areas
4	• Extra operations people added • More discussion of WS 3, Order Winning Criteria • WS 4, Current Operations Performance for more product families • Each team explained its scores to the other • WS 6, Current operations Strategy • WS 7, Strategy Derivation handed out for homework
5	• Summary of where team had reached • Explanation of WS 7, Strategy Derivation and WS8, Action Plan • Filled out Strategy Derivation and Action Plan for 2 product families • Received Market Share and contribution information • Arrangements for customer visits at next meeting
6 (Longer meeting)	• Customer view received from local butcher • Received Wilson objectives • Revised Order Winning Criteria for two product families • Groups feedback to team • Two groups completed WS 7 and 8 for two more product families • Groups feedback to team • Introduced Distinctive Competencies and performance measures
7 (Longer meeting)	• Key events since last meeting by Directors • Completed brief Strategic and Operations Logistics Plan for four product families • Talked about implementation steps

Table 6.7 Items covered at each meeting at Wilson

covered at each of the meetings. The first meeting took place in a small, portable office used as a meeting room. Team members gradually arrived over the thirty minutes after the meeting was due to start. The facilitators introduced themselves to the team members and briefly introduced strategic operations planning. There was much discussion of detailed operational matters and some discussion of future requirements such as boning room expansion. The Sales and Marketing Director went through the existing Wilson Corporate Plan in response to a question from the plant foreman. The facilitator asked whether members saw a benefit in SOLP. After some discussion, all agreed that a plan was needed.

The facilitator said that some homework was required and handed out worksheets for Market Requirements for Boxed Beef. Explanation was needed about what the terms meant, but by the time he had finished explaining them, all sheets had been completed. The second facilitator, who was an eminent meat muscle chemist, was questioned about the effects of different cooling temperatures on meat taste and tenderness. It is considered that this ability to give expert advice on process details was pivotal in getting team members to accept a process quite outside their previous experience. Worksheets were circulated for the Achieved Performance of the same product family, Boxed Beef. Two other directors were present at the first meeting out of curiosity and a concern that confidentiality should not be breached.

The second meeting took place two weeks later. When the facilitators arrived, six team members were already in the meeting room, demonstrating more interest than in the first meeting. After some comments to make team members comfortable with the process, the facilitator collected the worksheets for Achieved Performance of Boxed Beef and shared the results for Market Requirements of that product family. The second facilitator led the team to derive the product families needed to represent beef and lamb products. This provoked a considerable input from team members. The first facilitator shared the profile of Achieved Performance versus Market Requirement for Boxed Beef. It appeared that Wilson was over-achieving on product features and under-achieving on flexibility of design and volume variations. This provoked some discussion on the correctness of the

findings. The differences on two of the criteria were considered spurious, due to team members having difficulty with some of the terms.

The facilitator introduced the team to the worksheet of Order Winning Criteria. The Sales Director undertook to complete this worksheet before the next meeting, but this did not happen because he was unsure how to obtain the information required. The facilitator also spoke briefly about the Market Share worksheet and the need for business objectives from the five-year Corporate Plan. A loss of interest by team members towards the end of the two-hour meeting was observed. This is understandable since it was 7.30pm and most members had been at work since 6 am.

The third meeting took place two weeks later with only five team members present. Others were missing for several valid reasons. The meeting started at 3.45pm and continued until 6pm. The Order Winning Criteria worksheet was filled out individually and, later in the meeting, the average across the team was presented. The team was split into two groups to work on one chosen product family each. These groups filled out Worksheet 4, Current Operations Performance, and Worksheet 6, Assessing the Current Operations Strategy. Members were interested and attentive in spite of a number of interruptions. They filled in the worksheets very quickly. Members had difficulty with operations policies at first acquaintance. At the end of the meeting, members were interviewed to measure their degree of understanding of strategic operations.

At the fourth meeting, two weeks later, the team was augmented by the Operations Director, who had been overseas on leave, and the Sales Manager, who had been away due to an injury. Two other operations supervisors were supposed to attend, but one of them never did and the other only for the last meeting. The new members were briefed on what had already transpired. Discussion of Worksheet 3 led to Boxed Beef being split into two families, Food Service and Retail. Working in two separate groups, team members slowly filled in the Current Operations Performance worksheet, mainly working by consensus and frequently typifying current practice as 'good' rather than explaining it. Each team explained their scores to the other. A broader understanding of operations issues was generated. Members of each group went on to Worksheet 6, Current

Operations Strategy. This finished at the end of the time allotted for the meeting, so Worksheet 7, Strategy Derivation was handed out as homework. This was misguided since no homework had been completed so far. There was a constructive feeling in the meeting with the departure of the plant foreman, who had resigned, and the addition of the Operations Director. The facilitators had dinner with the Directors after the meeting to discuss what they wanted to achieve from the SOLP process. Over dinner, the Sales Director asked for help in filling in the Market Share worksheet.

The fifth meeting took place two weeks later starting at 4pm, with six team members and two facilitators present. One facilitator started by describing where the team had reached, Current Operations Strategy for Lamb Carcase and Boxed Beef. He then explained how the Strategy Derivation and Action Plan worksheets operated. Working in two groups, members filled in these worksheets. This gave them a shared vision with consensus reached after ideas were bounced around the group. Each group explained its plan to the other. The Market Share and Contribution worksheet was presented by the Sales Director. Arrangements were made for a longer meeting on a Saturday and for a customer to speak to the meeting about his requirements from Wilson.

The sixth meeting took place one month later starting at 9am on a Saturday in a local hotel and running for over six hours. Eight members were present with the Boning Room Supervisor joining the team for the first time. The meeting started with revision; each group shared their aims and actions for Lamb Carcase and Boxed Beef. The customer view was provided by the local butcher, since the Victorian meat buyer from the independent supermarkets was unable to attend. Team members were interested in the butcher's views but a wider perspective would have created more impression. Wilson's mission and objectives were presented by one of the Directors. They were accepted after discussion and some modification of the mission. The Order Winners worksheet was revised for two product families. The fact that this worksheet was worked on at nearly every meeting implies the lack of a deep understanding of the process by many team members.

The next two important families were chosen, Beef Carcase and Boxed Beef (Food Service). Team members would follow these families through the full strategy formulation process during the day. The Current Operations Performance worksheet was filled in, working in two groups. Working out the Current Strategy took over thirty minutes due to difficulties with typifying current practice and filling all the boxes. The groups then moved on to Worksheet 7 and 8, with two members in each group completing each worksheet. Although unlikely in theory, since the results of worksheet 7 are the input to Worksheet 8, this worked well in practice. This was followed by feedback to the whole team, the Operations Director speaking to Beef Carcase and the Sales and Marketing Director speaking to Boxed Beef (Food Service). Team members were asked to evaluate the achievements of the SOLP process for them. The meeting closed with a resolution to send summaries of the plans to Wilson's Bank, to hold an implementation meeting in a month's time. A sober note was provided by an announcement that the recently ended month of May had been a very bad one for Wilson.

The last meeting took place one month later starting at 3pm. The two Directors in the team gave a brief update on the key events since the last planning meeting. More throughput of livestock had been achieved. Members received a brief SOLP plan for four product families which had been put together by the Office Manager and the Quality Officer (2), who had now been promoted to Plant Foreman. The plans comprised a one-page 'Action Plan Summary' for each product family (refer Table 6.11 for an example). The team talked about the implementation steps required. A conversation with the Sales and Marketing Director revealed that he was comfortable with the plans that had resulted: he did not expect an overall operations picture to be prepared.

Exit interviews were carried out by the facilitator with each team member to find out how their degree of understanding of strategic operations planning had changed and to examine their response to the SOLP process. Two years later the facilitator interviewed the Marketing and Operations Directors to obtain a view of the SOLP process after sufficient time for the planned strategies to be implemented. These interviews used a set of questions framed to obtain their views on the research propositions (refer section

3.4.3). Appendix 5 gives a full list of these additional questions. The responses are given in section 6.4.

6.2.2 Process Outcomes at Wilson

Application of the SOLP process resulted in several research outcomes for the Wilson meatworks, some of which affected the business. The outcomes, which are addressed in turn, are development of Order Winning Criteria, Decision Areas used to describe strategies, estimation of the stage of operations strategy evolution achieved and strategies, Action Plans and business outcomes.

6.2.2.1 Order Winning Criteria

The Order Winning Criteria (OWC) which the team used at Wilson meatworks are listed in Table 6.8. The OWC used by the Flock and Wilson teams (Table 6.8) are seen to be very similar. Differences at Wilson were:

- Price was amended to Price (productivity) to indicate the functional criterion which operations should pursue to enable the company to achieve the price criterion; and
- the 'Other' category supplied in the SOLP process was used by the Wilson team to include 'Product Tracing', a logistics criterion.

Flock	Wilson
• Delivery Reliability	• Delivery Reliability
• Features (processing options)	• Features (processing options)
• Quality (attainment of specification)	• Quality (attainment of specification)
• Flexibility of Design (specifications)	• Flexibility of Design (specifications)
• Response to variation in volume	• Response to variation in volume
• Price	• Price (productivity)
• Relationship building	• Product Tracing
• Other	• Other

Table 6.8 Comparison of Order Winning Criteria between Flock and Wilson

6.2.2.2 Decision Areas

The strategy content concepts developed in section 5.2.3 were applied in the same manner as at Flock (refer 6.1.2.2). A number of Decision Areas were used to provide the policy dimensions needed by managers when choosing operations strategy actions. Table 6.9 shows that the Decision Areas used at Flock were adopted for Wilson with one minor change. The fourth column in Table 6.9 shows the number of times each Decision Area was used across the four Action Plans derived by the Wilson team. The most prevalent Areas were processes and technology, human resources, control policies and distribution.

Flock		Wilson	
Area	*No. +*	*Area*	*No. +*
Facilities (Works)	7	Facilities (Works)	5
Human Resources	6	Human Resources	6
Producers*/ Suppliers	7	Producers*/ Suppliers	3
Distribution	4	Distribution	7
Processes and Technology	3	Processes and Technology	7
Vertical integration	3	Vertical integration	4
Capacity	2	Capacity	5
Quality	2	Quality/ QA staff	3
Control Policies	0	Control Policies	7
New product introduction	1	New product introduction	3

Table 6.9 Comparison of Decision Areas prevalence between Flock and Wilson

* Producers means farmers

\+ Column indicates number of proposed actions in each Decision Area across all four Action Plans

6.2.2.3 Operations Strategic Role

The researcher's observations enabled the stage of evolution of operations strategy to be classified at Wilson (Table 6.10) using the same method as at Flock, refer Table 6.5. As a result, Wilson's operations are estimated to be in stage 1, that is 'Internally Neutral'.

Stage	Characteristic (abbreviated)	Wilson
1	External experts used	Sometimes
Internally	Control systems to monitor	Yes
Neutral	Flexible and reactive	Yes
2	Industry practice is followed	No, worse
Externally	Planning horizon is one cycle	No, worse
Neutral	Capital investment	No, branding*
3	Investments are screened	No formal strategy
Internally	Changes in strategy translated	No
Supportive	Longer-term developments	No
4	Anticipate the potential	No
Externally	Centrally involved	Not in that form
Supportive	Capabilities in advance	No

Table 6.10 Assessment of Characteristics of Strategy Evolution for Wilson

* Product branding, rather than capital investment, is regarded as the primary means of achieving a competitive edge.

The assessment that Wilson is in the 'Internally Neutral' stage is confirmed by several other observations. Marketing and Sales appeared to have a very rushed existence with limited purview, including limited input into the development of operations to support their customers. The Sales Director needed help in completing the Market Share Worksheet and was unable to get a major customer to address a team meeting (refer section 6.2.1). Team members worked on the Order Winners worksheet at every meeting, revealing that many members lacked a true understanding of the SOLP process.

This assessment of Wilson's characteristics can be compared with the assessments at the other two meatworks (refer sections 6.1.2.3 and 7.6.1.3).

6.2.2.4 Strategies, Action Plans and Business Outcomes

Application of the SOLP process at Wilson resulted in four strategies and some business outcomes. The strategies are represented by Action Plan summaries derived for each family of products which, collectively, covered the whole of Wilson's business. Each Action Plan comprised, for each operations policy and logistics policy area, weaknesses identified, actions intended and time/ person to implement (refer Table 6.11). The format

used, compiled by the Office Manager, places the summaries between the Strategy Derivation and Action Plan worksheets (refer section 5.3.2).

Wilson Pty. Ltd.			
ACTION PLAN SUMMARY – BOXED BEEF RETAIL			
Operations Policy	*Identified Weakness*	*Actions*	*To be implemented by: Time/ Person*
Facility (Works)	Lack of space in chiller prior to boning product	Research viability of building new chiller	Jan 1998 JD to research costs
Capacity	Production is reduced by equipment faults & lack of people	Improve skills of back-up staff	First half of 1998. JD/ PD
Vertical Integration	Sufficient livestock supply	Encourage yield-based chiller assessment for sales	JD working towards it now
Process and Technology	System very much manual at this time	Installation of a fully integrated ticketing & inventory system	JD/KS/PD/DS to research costs involved by start 1998
Human Resources	Limited trained personnel	Train back- up staff to level 1	Keep going with training & seek government assistance
Quality (conform to Customer needs)	Short time span to fill customer orders	Can be both strength and weakness *	Should improve with additional storage space
Control Policies	Is the team working efficiently? Are boning practices good? *	Possible introduction of 'whizzer' knife to get maximum trim from bodies	Costing to be done by JD/PD ASAP
Producers/ Suppliers	Are we getting the best deal on boxes/bags etc.?	Continue with costing.	Must screw suppliers as hard as possible
Distribution	Wrong product in boxes etc.	Train personnel in identifying cuts. Keep rotation correct for FIFO	Keep going with training & seek government assistance
New Product	Not pushed for at present *	Research other markets	PD/JD to make enquiries now
Other			

Table 6.11 Example of Action Plan for Wilson

(* identifies comments which do not fit the headings, but reproduce actual entries made by Wilson team members)

The SOLP process enabled the Wilson team to take a number of decisions, constrained by the lack of capital and cash flow available. Such decisions were promulgated by the two Directors on the team with the process being responsible for other team members understanding the requirements and context for the developments. The business effects of

these decisions are covered further using the outcomes of interviews two years after the SOLP process (refer section 6.4).

6.3 Assessing Managers' Understanding of SOLP at Flock and Wilson

Structured interviews to determine the degree of understanding of the SOLP process were carried out at Flock and Wilson both at the start and the end of the SOLP process. Both interviews posed the same questions to each team member, and extra questions were added at the end of the process (refer Appendix 2). This section summarises the views expressed by the team members in these interviews (Appendix 4 provides records of each interview) and it describes the outcomes for both meatworks. At Wilson one team member declined to be interviewed at the start because he was "too busy with other duties".

Three types of decisions were defined for the team members at the two meatworks. They were then asked 'What proportion of your time do you spend on Running, Tactical and Strategic decisions?'. The responses are shown in Table 6.12 for five of the six managers who responded at Flock and six of the seven Wilson responses. Flock's Quality Manager (responses Running 15%, Tactical 80% and Strategic 5%) was excluded from the Flock averages, because his responses were very different from other members, who presented a uniform view of the split between the three decision areas. Responses by Wilson's Financial Consultant were excluded, since he was not a full-time employee of Wilson.

	Flock		**Wilson**	
Type of Decision	Average % before SOLP *	Average % after SOLP *	Average % before SOLP +	Average % after SOLP +
Running	80	83	65	79
Tactical	15	13	28	15
Strategic	5	4	7	6
	* Excluding Quality Manager		+ Excluding Financial Consultant	

Table 6.12 Proportion of time members spent on various decision types

The table shows the lack of time spent on strategic decisions by all managers at Flock and Wilson. There is no significant change between the proportion of time spent on each type of decision from before to after the SOLP process. One would hope that managers might spend more time on strategic decisions after being involved in the SOLP process but this does not seem to be the case at Flock. The slight drop in the average proportion of time spent on strategic decisions at both Flock and Wilson is considered to be random variation, rather than having any significance. It is considered that an increase in the proportion of time managers spend on strategic decisions would require replication of the SOLP process and more emphasis on strategic rather than short-term decisions by the directors of the meatworks. The change in the average proportion of time spent on running and tactical decisions at Wilson is accounted for largely by the Office Manager who changed her respective proportions from 10 and 80 (before) to 70 and 25 (after).

The seven team members at Flock and the eight members at Wilson were asked to nominate the three policy areas in which each had the most involvement. Table 6.13 shows the number of managers, at each works, who nominated each policy area at the start and the end of the process. Responses, constrained by the areas in the table, are listed in order of prevalence. At Flock, human resources and control policies are seen to be the most prevalent policy issues followed by livestock supply and facilities. At Wilson, the corresponding prevalent issues are human resources and control policies followed by processes. There is little change in the policy area focus between the works. However, at Wilson facilities gain some attention after the SOLP process. These interview responses can be compared with the prevalence of use of Decision Areas analysed in Tables 6.4 and 6.9. The comparison is made in section 8.1.2.

The number of Flock managers with decisions in the 'too hard basket' reduced from six out of seven before the process to four out of seven afterwards, whereas at Wilson the hard decisions changed from five out of seven before the process to all six responses afterwards. This suggests that the SOLP process helped Flock members to make some progress but did not help the Wilson members. At the end of the process, Wilson team members were asked to consider whether their *previous* 'too hard' decisions still awaited

Policy area	Flock policies chosen		Wilson policies chosen	
	Number Before (7 responses)	Number After (7 responses)	Number Before (7 responses)	Number After (8 responses)
Human Resources	5	3	5	5
Control Policies	4	4	5	5
Processes	1	2	3	3
Quality	2	1	2	2
Livestock supply	3	3	1	0
New products	2	2	1	2
Capacity	1	0	1	2
Facilities	2	3	0	2
Vertical Integration	1	2	0	0

Table 6.13 Policy areas identified by managers as having their highest involvement

action. Only one member could remember his previous hard problem, which he felt was closer to solution. This question was deleted from interviews at the next company because of the lack of valid responses. Flock team members were also asked whether their previous hard decisions awaited action. These decisions comprised boning room capacity, a workers' compensation problem and new software purchases. Amongst the six members, four hard decisions were still in abeyance whilst three were being addressed. This considerable improvement may have been assisted by the SOLP process.

The proportion of Flock team members, who felt their ability to make strategic or tactical decisions was impaired, remained the same, six out of seven both before and after the process. At Wilson the proportion making this response rose slightly, from five out of seven before the process to all six responses afterwards.

In answer to the question 'What have you achieved by means of the planning process?' six out of seven members at Flock said 'Planning together as a team'. Three of the seven managers indicated that they felt closer to other members as a result of the process. Hence some team building appears to have taken place as a direct result. In answer to the same question, four out of eight members at Wilson said that they had more insight into strategy. One member mentioned a specific gain, approval of a new computer for critical control point records. Two members answered in terms of ongoing strategy development

rather than the SOLP process and one member had too little SOLP involvement to comment.

Application of the process at Flock gave a better understanding of strategic planning, its benefits for the company and its implications for individual managers. Managers did not think that strategic management had improved but five out of seven managers thought that team members were more aware of the strategic decisions required. The need for customers' requirements to drive the operation's posture was understood by all managers. Only two of the seven managers had taken actions personally as a result. At Wilson, four out of seven managers felt that strategic management at Wilson had improved. Five of the seven members felt closer to other team members as a result of SOLP and five of the seven had taken actions personally as a result. This is a good result and indicates that team members gained value from the process in their individual jobs.

Answers to the question 'What needs to be done to improve the development of (*Flock or Wilson*) business?' asked only at the end of the process are indicated by Table 6.14. At Flock the predominant response from the seven team members was sales expansion, whereas at Wilson the predominant member-response amongst the six obtained was marketing improvement and better customer communication.

Response	Flock Frequency	Wilson Frequency
Marketing improvement & better communication	4	4
Better quality products through training	0	2
Learn to plan or revisit previous plan	2	1
Recruit more skilled people	1	1
Increased boning volume	1	1
Restructure roles	1	0

Table 6.14 Requirements for business development

Flock team members were asked the question 'Which is the most important area of business for the future?' at the end of the process. Reference to Table 6.15 shows that the predominant answers were portion control (i.e. conversion of products into individual sales portions) and becoming closer to the customer. Frequencies exceed seven because

two members gave more than one answer. Only two members were personally taking action in their most important future area. Only one member considered that others were working on this area, two thought a little was being done, three believed nothing was being done. Table 6.15 shows that the predominant answer by Wilson team members was sales. In contrast to the response at Flock, seven out of eight Wilson members were personally taking action in their most important future area. Also seven out of eight considered that others were working on that area. These responses are consistent with an air of urgency verging on crisis at Wilson due to difficulties in obtaining sufficient profit to survive.

Response	Flock Frequency	Wilson Frequency
Closer to the Customer, Sales	3	3
Portion control, boxed meat	4	2
Increase in volume/ contract kill	0	2
Supply, supply reputation	1	1
Exporting	1	0

Table 6.15 Important future business area

In response to the question 'Is anything inhibiting action in this important area?', six of the seven Flock members considered that action was inhibited. In four cases the right person or skills were not available; in one case fear of change was thought to be the inhibiter and in one case the culture of cattle suppliers was believed to inhibit action. In response to the same question, five of the seven Wilson members considered that action was inhibited by lack of finance (2 responses), plant capacity (2) and lack of staff (1).

As a result of the process, Flock managers would give better consideration to suppliers of livestock and distributors of meat in the meat processing logistic channel. Four out of seven managers nominated logistics or customers as the most important business area for Flock. Involvement of external logistics people was limited to the manager of the smallgoods subsidiary of the company.

In the interviews at the end of the SOLP process, Flock and Wilson managers were asked to consider which areas of the work were helpful or unhelpful during the seven meetings.

Each manager was requested to provide up to three aspects of the process that were helpful and up to three that were unhelpful. The Flock 'helpful' answers by the seven managers (Table 6.16) concentrated on the increased understanding of strategic planning and the opportunity to plan with senior colleagues whilst the most frequent 'unhelpful' response was that the worksheets were not in meat industry terms. In the Wilson answers to the same questions by the six respondents (Table 6.16), the helpful areas concentrated on understanding strategic planning and the opportunity to network with colleagues from all functions. The main unhelpful area at Wilson was the existence of too many worksheets. This suggests that the SOLP process was understood less by the Wilson team members than by the Flock team. Four of the seven full-period members at Wilson indicated some difficulty in understanding the strategy process.

	Helpful areas Frequency		**Unhelpful areas Frequency**		
Response	*Flock*	*Wilson*	*Response*	*Flock*	*Wilson*
Time to sit down with others to plan	5	1	Worksheets not in meat industry terms	3	0
Networking with others	2	4	Team not focussed enough on task	2	1
Understand strategic planning	3	5	Sessions too long or too much preamble	2	1
Availability of facilitator	2	0	Complex, too many worksheets	0	4
Use of Worksheets and discussion	0	1	Use of product families impractical	0	2

Table 6.16 Helpful and unhelpful aspects of process

Flock members' views on the suitability of the role played by the facilitator were sought by asking 'What should the facilitator have done to improve meetings?' Most members did not find any faults in the facilitation but the following improvements were suggested:

- create more energy and excitement,
- keep group together as a whole (not split into two groups), and
- ban mobile telephones.

Three out of six Wilson members responding to the same question considered that the facilitator did as much as possible. Other members suggested the following improvements:

- our time was too limited ,
- more flexible worksheets , and
- facilitator did not understand industry sufficiently.

Members at Flock were asked the key question 'Has the strategic planning improved your performance?' Their answers were quite mixed. Out of the seven respondents, two said 'Yes', three said 'Unsure' and two said 'No'. As a result of the process, two members were more aware of the company picture and two were able to visualise where the company needed to go. When the seven Wilson respondents were asked the same question, four said 'Yes' and three said 'Unsure,' including the two Directors. This suggests that an important contribution of the process at Wilson was team development. Five of the seven team members felt closer to other members, whilst one felt a little closer. One of the members singled out the involvement of key personnel in the process as worthy of extra, unprompted comment *"Good to get the key personnel involved since previously we had been told too little"* (Quality Assurance Officer 1).

Because of the changes in the meat processing industry, the question 'Is a difficult trade situation making it harder to plan at the moment?' was asked. At Flock members' opinion was split, with four saying 'Yes' and three saying 'No'. At Wilson, four members said 'Yes' and two said 'No' and one looked to an improvement in the future.

The extent of team members' interest in further training in strategic management was investigated by the questions 'Would you be interested in personal development in strategic management (Such as strategic thinking in your responsibility area)' and 'What do you wish to be addressed?'. The Flock answers (Table 6.17) showed a great majority interested in such training whilst half the members wished to develop detailed strategies.

The Wilson answers (Table 6.17) indicated half the members interested in such training but with little knowledge of the area required.

	Flock	**Wilson**
Would you be interested in personal development in strategic management?	Yes - 6 No - 1	Yes - 4 No - 2 No response -2
Area to be addressed	Frequency	*Frequency*
Detailed strategy development	3	-
Plan for own group	2	1
Management re-structure	1	-
Case studies with team	1	-
Time management & delegation	-	1

Table 6.17 Requirement for further training

A final question invited team members to make any other comments about strategic planning for Flock. This elicited the following responses by single members except where otherwise indicated:

- Planning should become part of normal work,
- 'Let's not leave it here', let's develop a full plan (2 responses),
- Ownership of plans needs to come from managers, and
- Review decisions in twelve months.

This question elicited the following responses by single members at Wilson:

- Planning should include all levels of management,
- Worth continuing into a full plan,
- Key personnel need to be involved, they are told too little,
- Wilson will increase its market share in the future, and
- 'Some procedures not relevant for our plant'.

There was some understanding of the need for customers to drive operations strategy at Wilson, although this was only partially converted into action during the SOLP process. Not until the sixth meeting did a customer attend a meeting and then he was only the local rural butcher.

In the logistics area, limited consideration was given to suppliers of livestock and distribution of meat products by the Wilson team during the SOLP process. There was no involvement of external logistics contacts.

6.4 Post-SOLP Implementation Interviews

A visit was made to Flock and Wilson Meatworks over two years after the SOLP process finished to pose a number of deeper questions to two senior managers at each to determine their attitude to the effect of the process on their company and to throw light on the research propositions (refer section 5.4). These questions and their responses are documented in Appendix 5.

Table 6.18 documents the main responses to these questions by the Managing Director and the Financial Controller at Flock works. The Managing Director was chosen as the pre-eminent decision maker. The Controller was chosen because his education gave him a wider insight into the questions than the other managers. These responses are interpreted in section 8.1.5.

The researcher also visited Wilson Meatworks over two years after the SOLP process finished to pose questions to two Directors. The Directors were chosen because they understood the business better than the other team members. Table 6.19 documents the responses by each Director. These responses are interpreted in section 8.1.5.

The responses by the four managers reported in Tables 6.18 and 6.19 show a positive appreciation of the effect of the SOLP process on their companies. The question responses at Flock (Table 6.18) show a high regard for the improved motivation of managers and outcomes achieved through the process. The responses at Wilson (Table 6.19) are also appreciative of improved motivation of team members, although the outcomes were narrower than those at Flock.

This concludes the outcomes from the SOLP process and the interviews at the Flock and Wilson meatworks. Chapter 7 extends the SOLP process into a complete supply chain and applies this at a third meatworks. Chapter 8, section 1 provides analysis of the outcomes of the SOLP process at the two meatworks, based on Chapter 6, combined with the corresponding outcomes from the third meatworks, in Chapter 7. In section 8.2, the amount of support for research propositions provided by the process applications and the interviews in all three meatworks are discussed.

Question	Responses	
	Managing Director	*Financial Controller*
1. Did team members obtain a vision?	Yes	Started people thinking
2. What verifiable outcomes resulted? - $ spent - Processes changed - Team relations & actions	 $1.5 million Move to two shifts Not known	 - - Communi ations improved
3. Plans developed without Game Plan?	Yes, I think	Yes, possibly different
4. Did Game Plan contribute to better decisions?	Would have happened anyway	Yes -
5. Improved management performance? 5a. Targets gained though Game Plan?	Yes, better communication Better manag't. style	N No
6. How important to have external facilitator?	Have to have one	Extremely
7. Anything missing from Game Plan process?	Lack of commitment by Flock	Show typical outcomes
8. Has GP motivated managers to pull together?	Yes	Yes, in the short term
9.Were O & L** strategies combined? 9a. Is it important to plan O & L together?	Yes Yes	Yes Yes, very important
10. Other strategic initiatives since Game Plan? 10a. Due to GP process?	Yes, three Only one of them	(prompted) Yes, rinsing and chilling No
11. Did GP improve O & L performance?	Don't know	Yes
12. Did team members gain longer view? 12a. Does this help with strategic decisions? 12b. Example of such a decision?	Yes, I think Should, need to repeat GP Too long ago	All except one Yes Example given
13. Were GP strategies communicated through management team? 13a. Did this affect performance?	Yes Communication has improved	Yes Yes
14. Is Meat Industry significantly different to other industry?	No, all manufacturing industry is the same	Yes &No, business not changed dramatically
15. What changes would improve Game Plan?	More commitment; confidence to override MD	Repeat every six months

Table 6.18 Post-SOLP implementation questions and responses at Flock

* GP means Game Plan ** O & L means Operations and Logistics

Question	Responses	
	Sales & Marketing Director	*Operations Director*
1. Did team members obtain a vision?	A bit of a vision	Yes, building on prior
2. What verifiable outcomes resulted? - Processes changed - Team relations & actions	 Ticketing system Train back-up staff	 Use of contractors QA officers gained management skills
3. Plans developed without Game Plan?	Yes, but GP* good	Yes, but less focus on boning
4. Did Game Plan contribute to better decisions?	Yes, 25% of decisions made due to GP	-
5. Improved management performance? 5a. Targets gained though Game Plan?	Yes, more professional Sales up 16%, partly due to GP	By QA Officers -
6. How important to have external facilitator?	Very, would not have happened without.	Always important
7. Anything missing from Game Plan process?	Not sure. Simpler process needed.	Industry specifics, benchmarking
8. Has GP* motivated managers to pull together?	Yes	Yes, weekly meetings, then reports
9.Were operations & logistics strategies combined? 9a. Important to plan O & L together?	(Question not understood) -	Yes, the big picture - Yes
10. Other strategic initiatives since GP? 10a. Due to GP process?	- More duc to marketing philosophy	Work with producers -
11. Did GP improve O & L** performance?	Yes, product tracing	Gave focus. Gained ISO 9002
12. Did team members gain longer view? 12a. Does this help with strategic decisions? 12b. Example of such a decision?	(see above) - Export sales made	Definitely - Gained ISO 9002
13. Were GP strategies communicated through management team? 13a. Did this affect performance?	A start was made Not known, possibly	Wilson held various longer meetings
14. Is Meat Industry significantly different to other manufacturing industry?	-	Need to talk to manager with outside experience
15. What changes would improve Game Plan?	Needs more tailoring, too long-winded	Process good, but tailoring required

Table 6.19 Post-SOLP implementation questions and responses at Wilson

* GP means Game Plan ** O & L means Operations and Logistics

CHAPTER 7

EXTENDING AND APPLYING SOLP TO THE INTEGRATED SUPPLY CHAIN

"A business deal should not be a contest but rather should be an effort to seek an arrangement which has something in it for everyone. Business is not about one-off deals, it is about building relationships which endure." (Harvey-Jones, 1995).

This chapter describes the fourth phase of the research project, in which the Strategic Operations and Logistics Planning(SOLP) process is extended to plan the operations of the integrated supply chain, and the fifth phase, in which the extended process is applied to a smallgoods meat processing company. This extension is carried out because integration of all links within the supply chain is required to effectively achieve customer requirements (refer section 2.7). The first section of the chapter explains why it is necessary to plan all the links in the supply chain synchronously. The second section proposes an extension to the SOLP process to operationalise that supply chain planning and the third section summarises this extension.

This chapter also describes research Phase 5 in which the extended SOLP process is applied to a smallgoods meatworks, which will be called 'Bradley'. It explains the operational implementation required to extend the process to the supply chain in two sequential applications and the outcomes of the processes.

7.1 The Requirement to add Supply Chain Partners into Operations Strategy

In section 2.7 a case is made for the operations and logistics functions of all enterprises in a supply chain to connect their strategies. The aim is to formulate a set of strategies represented by implementable 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 7.1 illustrates the structure of the chain. These partners,

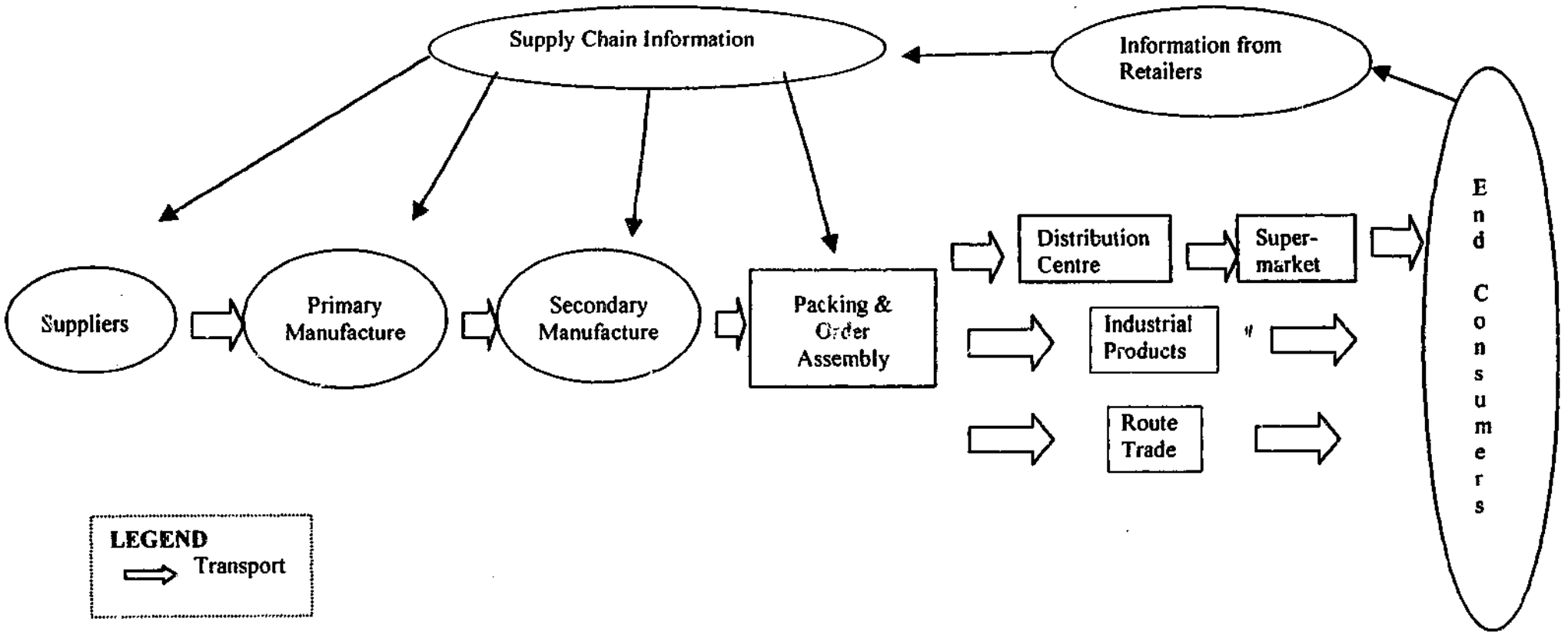


Figure 7.1 Links in the integrated Supply Chain for smallgoods products

or enterprises, in the chain are called links. If an individual enterprise, representing one link, carries out its own operations and logistics strategy, it will tend to sub-optimise its own part of the chain (Womack and Jones 1994, p. 93; Slack 1991, p. 160-164). 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 future 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, p. 93-103), which they believe would lead to dramatic improvements in supply chains.

This joint planning must be done without loosing sight of the requirement for the operations and logistics functions of each company to coordinate their strategies with those of other internal functions in their own enterprises. Such functions include marketing, research and development, human resources and engineering (Mills and Gardner 1995, p.37-44).

Accepting that there is a need to add supply chain partners into the SOLP process, the next section describes how that might be done.

7.2 Extended SOLP

This section provides an extension of the SOLP process to provide integrated supply chain planning for the meat processing industry. It is argued that this process fulfils that industry's need for strategic operations planning. The process is generic and is based upon the experience gained in the meat industry in phases 2 and 3 of the research project. It is intended for application by all partner-companies, or intermediaries, in the supply chain and, hence, the process is called *integrated* supply chain planning. This is distinct from many of the accounts in the literature which, even if called 'supply chain', do not develop planning by all intermediaries (refer Gattorna and Walters 1996, p. 165-175;

Fabbe-Costes and Colin 1994, p. 36-50; Lamming 1989, p.19-32; and Rice 1997, p. 239-255). These processes are predominantly limited to manufacturers.

The theoretical foundation of the process, in line with the literature discussed in section 2.7, rests upon the following statements:

1. Planning is a democratic, creative process in which natural process steps are preferred to a complex, logical series of planning decisions (Platts 1993, p. 4-17; Voss 1992, p. 121-132; Menda and Dilts 1997, p. 223-241). This is the view that strategy is intuitive and emerging (Mintzberg and Quinn 1991, p. 3-19; Mills et al. 1994, p. 235-240) as well as comprising a logical series of decisions (Ansoff 1965, p. 205-210; Skinner 1978, p. 98-108).

2. Decisions on the policy, practices and resources required by a particular product-family-channel are made *together*, by a team representing all parts of the integrated supply chain, except the end consumer (Slack 1991, p. 160-164; Womack and Jones 1994, p. 93-103; Perry 1997, p. 244-251; Mabert and Venkataramanan 1998, p. 537-41). 'Together' implies that the decisions are made concurrently in the presence of other supply chain members. These decisions are made at the SOLP process stage, 'Formulate chain strategies' (Platts and Gregory, 1990, p. 17-23) which is discussed, for company operations and logistics functions, in section 5.3.2, steps 10 to 11. At this stage, integrated supply chain weaknesses are removed by the adoption of new policies which are considered to meet the strategic vision for operations and logistics (Cooper et al. 1997, p. 72-81).

3. The entity planned is the 'product-family-channel' which means a cohesive group of products going through a particular set of links, or intermediaries, to the consumer and the information that drives that process. The product-family-channel is a combination of Platts and Gregory's (1990, p. 5-26) product families with the marketing use of a channel (Berman 1996, p. 5-29). In marketing, a channel is the physical and transactional route that a product takes from a manufacturer to its end customers plus the information flow between the links to negotiate, order goods and

schedule manufacture and distribution. A number of such product channels together comprise the integrated supply chain (Cooper et al. 1997, p. 72-81).

4. The aim of the integrated supply chain is to achieve competitive criteria for end consumers (Hill 1989, p.36-39; Slack 1991, p. 160-175; Platts and Gregory 1992, p. 29-55).

Given the above theoretical foundation, the following concepts and entities, that represent essential components of the integrated supply chain, are defined. Also a number of assumptions are described.

- A *link* is an end point or an intermediary between farmers and end consumers. It is a separate enterprise or company function which takes responsibility for managing part of the total flow of information and goods in the supply chain. All links are involved in the flow of information, materials or products from farmers to manufacturers to retailers for some product channels. 'Link' refers to the literal part of a chain rather than the transport movement between two nodes, or fixed points, which is prevalent in the physical distribution literature;

- the *integrated supply chain* is represented by a number of links which, together, intend to satisfy the requirements of the end consumer. The *integrated supply chain* addresses the 'total supply network' (Slack 1991, p.160-164) of first and second tier suppliers providing materials and services to manufacturers, manufacturers who transform those materials into finished products, and intermediaries who are involved in the distribution of such products with attendant services to end consumers. Such intermediaries typically comprise wholesalers, retailers and providers of storage and transport services. All these partner enterprises, suppliers, manufacturers, distributors and retailers, are referred to as 'links'. A more holistic term for an *integrated supply chain* is *supply constellation* (Norman and Ramirez 1994, p. 54-55) which means a group of enterprises using knowledge and resources to design and produce products and services together to create value for themselves by delivery to customers. Implicit in this definition is the importance of the information which drives the production, and a move away from linear flow. Linear flow in value chains as described by Porter

(1985, p.33-58) is frequently superseded by a mixture of forward, backward and sideways flows (Christopher et al. 1999, p. 101-106). The boundaries of the integrated supply chain are not exact since they depend upon the significance of the links to the product-family-channels (refer Slack 1991, p.161 for a useful generic illustration). The decision regarding which 'potential' links or partners fall outside the integrated supply chain is illustrated by example. If the product channel being planned was a smallgoods product called Retail Ham, the integrated supply chain would comprise information exchanged and material/product moved between :

- pig producer,
- pig abattoir and boning room,
- transport firms involved in moving these pigs or pig meats,
- smallgoods manufacturer (producing Retail Ham),
- distribution centres (cold stores) receiving Retail Ham from smallgoods manufacturer,
- supermarket chain management and their distribution centres,
- supermarket stores, and
- transport firms moving Retail Hams between manufacturers and supermarkets.

It would exclude:

- abattoirs supplied by the pig producer in the chain but not dressing pigs for the smallgoods manufacturer,
- boning rooms supplied by the pig abattoir in the chain but not boning pigs for the smallgoods manufacturer,
- competitive smallgoods manufacturers,
- distribution centres not handling the manufacturer's Retail Ham,
- transport firms not handling pig meats or Retail Ham for this smallgoods manufacturer, and
- wholesalers or importers supplying products other than the planned Retail Ham to supermarket stores.

- *transformation* refers to the physical and chemical changes made to input materials, such as pigs or cattle, to convert them into finished products for consumers. In the meat processing industry transformation frequently comprises two links: 'dressing and chilling' and 'boning and manufacture';
- a *distribution centre* is a facility where finished products are received from manufacturing plants, stored at the right temperature and assembled into the exact order quantity requirements of individual retail stores, which comprise supermarkets and delicatessens. Distribution centres are owned by wholesalers, supermarket chains or service providers;
- *wholesalers* exist in the chain between manufacturers and retailers for some product-family-channels. Because they represent a form of business distinction with limited relevance to integrated supply chain operations, wholesalers are not named as separate links. They occur as owners of distribution centres, distribution networks or supermarket chains. The present process incorporates the operational role of wholesalers, rather than their commercial or promotional roles;
- *meetings* are gatherings of representatives of each link in the integrated supply chain, known as the team. Meetings follow a workshop format in which team members work through each stage in the planning process with the help of an external facilitator; and
- *information flow* comprises the sharing of electronic and other information for use by any supply chain enterprise (Rice 1997, p. 239-255). Information flow is identified separately because of its over-riding importance to effective supply chain operation, although it is not a link in the chain (Lewis and Talalayevska 1997, p. 147-152). Typically information drives procurement, manufacturing and distribution in the chain (Hines, Sullivan and Holweg 1999, p.67-72) and carries out numerous other functions at operational and, to a lesser extent, strategic levels. It is argued that the manager of the 'crossroads' (at which information is received and transmitted) should be a member of the planning team to ensure that the strategic planning process takes proper account of the significance of information. 'Crossroads' refers to the centralisation of all the information and data required by an integrated supply chain

which is now starting to occur due to the availability of intranet and Internet electronic communications (Silber 1998, p. i-iii). Such centralisation enables activities, such as scheduling, to be more accurately carried out and gives the potential for optimal strategies to be pursued as well as the prevalent operating actions.

The following assumptions are made so that the problem may be more simply expressed:

1. In the supply chain, the link of farmers typically comprises multiple suppliers, and the link of retailers typically comprises numerous customers of the manufacturer.
2. Two separate stages of manufacture are commonly required in the meat processing industry to transform animals into the meat products required by customers. These are called 'dressing and chilling', accomplished in an abattoir, and 'boning and manufacture', accomplished in boning rooms and smallgoods manufacturers.
3. Capacity to produce or move is used as one of the policies. It includes inventory, since inventory is a means of matching capacity to customer demand.
4. The major driving force for the supply chain is assumed to be the manufacturer (refer Cooper et al. 1997, p. 72) rather than the wholesaler or retailer because:
   - the manufacturer is considered to take the more strategic, or longer-term, view;
   - the manufacturer has the greater investment in the products;
   - the manufacturer, being in the middle of the chain, is in a better position to integrate its links; and
   - the manufacturer has more focus on the product family in the channel than the retailer who merchandises a large variety of products.

   It may be argued that the wholesaler or retailer is closer to the end consumer than the manufacturer and, therefore, knows his/her needs better. It is also true that Australian supermarket chains have been instrumental in buying cattle direct from farmers to ensure an acceptable level of quality. However, it is argued that this is a reaction to unsatisfactory practices by abattoirs rather than a correct supply chain planning procedure. Hence, on balance, the manufacturer is assumed to provide the main driving force in the supply chain.

5. The process assists a supply chain operating with consumer products rather than industrial products (Hill 1994, p. 221-226).
6. Supply chain strategy requires operational matters to be considered before cost minimisation through the links of the chain.
7. The integrated supply chains being planned have a sufficiently long life to make planning worthwhile.
8. The SOLP process addresses the strategic response to needs of consumers through the supply chain rather than operational or tactical decisions.
9. Change is included as a customer criterion to remind planning team members that consumer needs alter with time. This change of requirements is argued to be an important criterion, which goes beyond the change in volume needs covered under the category of flexibility.
10. In practical application, there will be points in the process at which team members decide to repeat earlier steps. Such iterations are not mentioned in this description.
11. The interaction of operations/ logistics with other functions in each link is acknowledged, although not explicitly mentioned.

Having explained the theoretical foundation of the process and the concepts and assumptions involved in it, the method of carrying out the extended SCLP process with members of the entire supply chain is now described. Table 7.1 provides the context in which the process is carried out whilst Figure 7.2 shows the stages of the process with their inputs and outputs. Three sets of parameters involved in the process are shown around the outside of Table 7.1:

- *Links*, defined in concepts (above) comprise all the intermediaries involved in the flow of materials and products from farmers to manufacturers to retailers for some product-family-channels. The value-adding steps which are listed as links include both product development and manufacturing/distribution cycles. 'Information flow' (defined in concepts above) between links is included beside links because of its

Table 7.1 Context for proposed process stages for supply chain planning

	Policies: / Links:	Facilities	Capacity	Link Integration	Processes & Technology	Transport	Product Quality	Control Policies & Information	Supply Logistics	Distribution	New Product Channel	
INFORMATION FLOW	Farmer	Supply Chain Objectives & Planning	Product Channels									OUTPUTS *
	Dressing and Chilling			Output Competitive Criteria								
	Boning & Manufacture				Link Criteria	Link Com-petencies						
	Transport: Inbound, Bulk, Delivery						Audit	Opportunit-ies & Threats				
	Distribution Centre								Formulate Chain Strategies	Formulate Link Strategies		
	Retailer										Chain Action Plans	
											Link Action Plans	
	Order Win. Criteria:	Quality	Features	Safety	Price/Cost/Profit		Flexibility	Delivery -Shelf Life	-Reliability		Consumer Change	

* Outputs comprise order winning criteria, strategies and vision.

importance to the planning process, since information-flows between links control the flow of products, although 'information flow' is not a link.

- *Order winning criteria* are those needs of end consumers which are provided by operations and logistics, since those functions play a major part in satisfying requirements for many facets of the product, such as quality. The integrated supply chain aims to satisfy these needs by maximising the likelihood that the customers served by a product channel will place orders with the chain through a retailer. Order winning criteria may change over-time for a number of reasons.
- *Policies* are structural and infrastructural decision areas (Hayes and Wheelwright 1984, p. 31-34) which the management of supply chain enterprises configures to achieve the required flow of materials, products and information through the chain so that customer criteria are achieved at a profit. The policies required to achieve customer criteria comprise allocation of resources and development of capabilities to win business.

Given the context of these three sets of parameters, the proposed process stages are shown on the diagonal of Table 7.1 to emphasise that they sit within that domain. The 'outputs' indicated on the right hand side of Table 7.1 are the set of Action Plans derived for each product-family-channel for each link in the supply chain. The proposed arrangement of stages to be followed by the planning team is given in Figure 7.2 with their inputs and outputs. The team, which represents all links in the chain, works together to plan the whole supply chain. The team uses an external facilitator to provide democratic coordination. With this support, team members work through the following ten stages in a series of meetings:

1. Decide supply chain business objectives, such as delivery of acceptable products to particular customer-markets and return required on resources employed; and the context from which team members start. This stage may include activities to motivate the planning team if required. An example of such an activity is the profile of market requirements versus achieved performance (Platts and Gregory 1992, p. 38) which was used at Flock (refer section 6.1.1) and Wilson (refer section 6.2.1).

2. Partition the range of required customer-markets into a number of product-family-channels, which require distinct treatment through the chain. This is necessary to enable team members to design strategies which are tailored to meet the precise needs of customers via the product channel. It is analogous to Platts and Gregory's (1992, p. 38) use of product families within the operations of enterprises.

3. Determine the output order winning criteria which each product channel is required to meet, both now and at the end of the planning period. These are the results obtained at the consumer end of the supply chain by the cumulative efforts of all the links.

4. Determine the criteria which each link along the chain is required to meet for each product-family-channel so that the chain, as a whole, achieves the output criteria for end consumers. Decide the competencies of process and people which will be built by chain members so that the chain is able to compete when present needs change.

Stages 5 to 10 are carried out for two product-family-channels at a time, with half the team members concentrating on each product channel and describing their outputs to the whole team. This uses the same method found to be helpful at Flock and Wilson (refer Chapter 6). Team members start with the most important product channels, then repeating these stages for subsequent channels.

5. Audit the current capabilities of operations, information and logistics throughout the chain, by product-family-channel, to determine how well they meet the capabilities required by the output and link criteria (refer section 5.3.2). Output criteria are those required by consumers at the end of the supply chain. Link criteria are those at intermediate parts of the chain. Determine performance measures which indicate the extent to which the desired capabilities have been achieved.

6. Assess the opportunities and threats which are likely to affect the supply chain in the planning period.

7. Formulate the alternative strategies required in each policy area and the practices to be adopted by the whole supply chain, to modify its capabilities in order to attain the competitive criteria (refer to section 5.3.2).

8. Separate the chain-wide strategies, decided in stage 7, into feasible policies and practices to be followed by each link in the chain for each product-family-channel.
9. Decide which actions are required to move from current to required policy settings and the sequence of those actions, in broad terms, across the whole supply chain (refer to section 5.3.2).
10. Convert the chain-wide action plans, decided in stage 9, into the time-phased actions required by each link to achieve the overall strategies for each product channel.

Finally, it is useful to consider which links are involved in achieving each end order winning criterion. The present work builds on that of Harland (1995, p. 203) who constructed a matrix of supply chain responsibilities for five dimensions of operational performance (similar to the customer criteria in the present work). She used this matrix to suggest different priorities between operational performance dimension according to position in the supply chain. The researcher has constructed a preliminary analysis of the degree of involvement for each link/ criterion combination using subjective judgement from his knowledge of the industry and his involvement in four SOLP processes. Each cell with one or more asterisks (*) in Table 7.2 implies that the link in the cell's row is expected to contribute to achieving the customer criterion for its column. The degree of involvement which that link has in the achievement of that criterion is indicated by the number of asterisks. The density of cells which contain asterisks implies that, in the meat industry, each link has a contribution towards achieving most customer criteria. It is emphasised that the assessment given in Table 7.2 has limited validity and it is used to point the way towards further research in this important facet of knowledge.

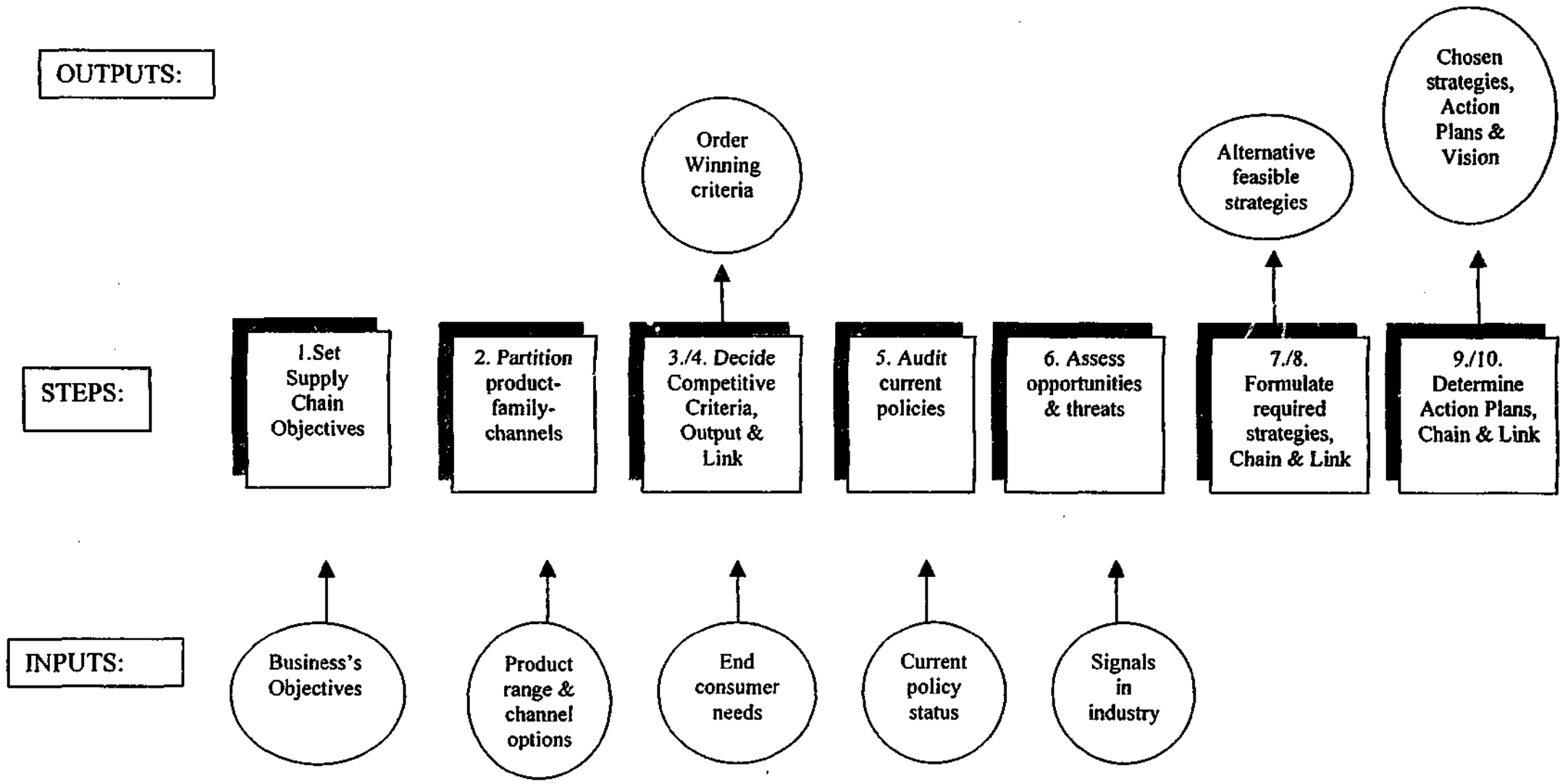


Figure 7.2 Proposed process stages undertaken by supply chain planning team

LINK	Customer Criteria							
	Quality	Features	Safety	Price/ Cost/ Profit	Flexibility	Delivery Shelf Life	Delivery Reliability	Change
Farmer	***	*		**	*			*
Dressing and Chilling	**		***	**	**	***	*	
Boning & Manufacture	***	***	***	***	**	***	***	**
Retailer	*		***	**	*	**	*	**
Transport: I, B, D			*	*	**	*	**	
Distribution Centre		*	*	*	**	**	***	*
Information flow	*	*		*	**	*	**	*

Table 7.2 Links involved in achieving particular order winning criteria

Legend: The degree of involvement of each link in achieving end customer criteria is indicated by

*	little
**	moderate
***	very significant

7.3 Summary of Extended Process

The supply chain planning process requires external facilitation to allow democratic co-operation between all team members representing different links in the chain. In practice, team members will have both joint and separate meetings. The content of individual decisions in each of these types of meetings cannot be specified, because the democratic process and the inter-reliance of links implies that each member should choose which meeting he or she attends.

The integrated supply chain process is developed as a logical extension of the application of the SOLP process to operations and logistics functions in manufacturing companies. This internal application was examined at Flock and Wilson (refer Chapter 6). Just as gains are made by strategic alignment of several functions in a company in the service of

customers, so considerable gains are anticipated from the alignment of the operations and logistics functions of all significant enterprises in the integrated supply chain from farmer to retailer.

The difficulty of achieving such alignment without coercion is very great. Specific benefits from applying the SOLP process to the integrated supply chain are considered to be:

- greater ability to supply the actual product that the end consumer requires;
- ability to design effective and profitable integrated supply chains for individual product-family-channels;
- postponing production and minimising inventory at each link by sharing information between chain partners;
- recognition of industry or customer changes through information from all chain partners in order to plan strategic responses in advance of competitors;
- use of Action Research methodology to enable the greatest possible strategic teamwork between chain partners so that changes are made for customers' benefit without unreasonable loss of sovereignty or profitability for any chain partner.

Having developed a process of integrated supply chain planning in sections 7.1 and 7.2, the remainder of this chapter describes how this extended process was applied in a smallgoods company. Section 7.4 introduces this company, section 7.5 describes the two applications at Bradley and section 7.6 provides the observations made during and after the process.

7.4 Bradley, the third meatworks

This section describes 'Bradley', the company used to test the extended SOLP process in two applications.

Bradley is a smallgoods manufacturer which purchases boned pig meats and processes them into a range of cured, preserved and fresh meat products known as smallgoods. Figure 5.2 shows the manufacturing processes carried out in a smallgoods factory.

Bradley was formed in 1947. It is the subsidiary of a large food processing company. Bradley is located in Melbourne, Australia, has an annual turnover of $110 million from sales of 14,000 tonnes of product and employs 440 people. Although selling into national markets and having some exports, its sales are predominantly made in the state of Victoria. The two largest segments of sales are the retail trade to supermarkets, accounting for 62% of product, and the route trade to delicatessen shops, accounting for 22% of product. The remaining 16% is sold to other food manufacturers and is known as industrial products. Bradley has a very strong brand image with Australian consumers.

Bradley is the market leader in the Australian smallgoods industry. It is widely accepted as having superior quality products as demonstrated by its ability to achieve a price differential relative to competitors on most of its products. Recently competitors have been improving their processing techniques, so that they are catching up to Bradley's quality standards.

Bradley has employed a series of continuous improvement techniques over the last eight years in an attempt to change from being production-driven to having a strong customer orientation. Whilst this has improved the industrial relations environment and working conditions, it had not improved the return on assets employed until 1998. A loss was made in 1997 as a result of having to recall smallgoods after major food poisoning outbreaks, although the implication that Bradley was involved in the poisoning was later proved to be incorrect. The improvement in profit in 1998 was more due to a fall in pig meat prices than enhanced market or operations strategy.

Management at Bradley is in transition due to the appointment of a new General Manager, the Chief Executive of the subsidiary, at the end of 1996, and a new Operations Manager in May, 1997. The General Manager started a restructure of Bradley's senior management which included a total reorganisation of the operations group under the new Operations Manager. In operations, this reorganisation comprised the appointment of six new managers to manufacturing and logistics positions and retrenchment of the majority of factory supervisors. Bradley is now progressing towards self-directed work groups including shop floor team leaders as part of the unionised workforce. Consequently the

SOLP team at Bradley included both new appointees and managers who had been there for many years.

The organisation of the SOLP process at Bradley is described in section 3.4.5 and the changes intended to extend the process to the whole supply chain are described in the next few paragraphs. Briefly, the researcher made contact with the Operations Manager, who accepted the proposal and appointed a team of twelve managers to undertake the SOLP process. Bradley was chosen because a venture into strategic operations and logistics planning was very timely for its management.

The Operations Manager at Bradley was very committed to including supply chain strategies with operations strategies for the smallgoods manufacturer. His background included a period as a logistics manager in a food processing company.

Inclusion of logistics policies and operations of supply chain partners is made easier if the operations manager or another senior manager has experience of the logistics area, as was the case at Bradley. The manager with experience is asked to explain the need to include logistics and procurement at the first team meeting. A range of products can be represented by more than one product family to represent different distribution channels. For example, Bradley's team looked at Frankfurts Bulk Retail, sold in supermarkets who purchase them centrally, and Frankfurts Bulk Route, distributed to small delicatessen shops by Bradley's vans, as two separate product families.

Representatives of supply chain partners can also be involved in the planning or its implementation without actually being part of the planning team. For example, Bradley's planning team involved the supermarket chains in the development of the new product, Fresh Sausage-Retail. This was done between meetings and the progress made was reported back to subsequent team meetings by the sales manager concerned.

The central part which logistics plays in the extended SOLP process is emphasised by asking managers of internal logistics areas to make presentations to the team on their area or to be responsible for some of the product family presentations to senior management. For example, at Bradley, the Deputy Purchasing Manager and the Logistics Manager

were responsible for two of the product family presentations to senior management at the end of the planning processes.

Further changes to the process are:

- Team members are taught the relevance of all supply chain members to successful operations response to customers;
- Worksheets are amended to refer explicitly to various supply chain members;
- Strategies required by the supply chain, of which the company is a part, are developed. This involves expanding the range of order winning criteria and including logistics policy areas such as suppliers and distribution; and
- Product families are defined in terms of a particular distribution channel for that family.

Measures of the degree of understanding of strategic operations, in interviews of team members, are expanded to include questions about the following supply chain matters:

- Expected contacts with outside organisations,
- Effect of outside contacts in improving performance, and
- Importance of other members of supply chain to the team member's job.

7.5 Applications of Extended SOLP Process

The SOLP process was applied twice at the Bradley meatworks during 1998.

7.5.1 First Planning Process at Bradley

The researcher held six meetings with the Operations Manager before the start of the process. At the first of these the Manager agreed to allow the researcher to facilitate the SOLP process with his operations and marketing managers. At the second meeting the operations manager was advised that it was important to include representatives of supply chain members in the team. These members, in this case, were piggery, abattoir, boning room, distributors and retail customers. Bradley's manager was well aware of the significance of these channel partners. He had undertaken negotiations with the piggery to change the fat content of pig carcases being supplied. He readily agreed to invite the

boning room manager to join the planning team. Piggery management was excluded because of a somewhat adversarial relationship. Distributors were not considered because their part was limited to transport of products. Retail customers were excluded because it was first necessary to get a good representation of internal marketing and sales managers on the team. However retail customers were listened to during step 7 (customer interviews, refer meeting six below) and visited by the whole team during the second planning process. Later meetings discussed the membership of the team, which was unusually large (see list below) and the timing and form of meetings. The proposal to carry out the SOLP process was also approved by the General Manager and he agreed to attend the relevant parts of meetings.

Whilst the Operations Manager was enthusiastic about the operations planning process, there were two concerns about the process at Bradley. The first was the lack of support from the marketing function. The Marketing and Sales Manager saw product planning as his responsibility and was not keen for the operations function to carry out SOLP, nor was he interested in being involved, either personally or via a representative. This concern was addressed by persuasion from senior Bradley managers and by the researcher explaining to the Marketing and Sales Manager that SOLP, although driven by customer requirements, was not involved in marketing plans. The second concern was the anticipated cynicism of the long-term Bradley managers on the team, who had seen five separate continuous improvement programmes take place over the previous eight years without any significant change to the key performance indicators in operations and sales. This concern was addressed by the Operations Manager at the start of the first meeting. The researcher then started the first step of the SOLP method, in which members complete product profile worksheets to emphasise the gains available from the process.

An important parameter was the size of the operations and logistics team. It comprised twelve managers, including one from a supplier, as shown in the partial organisation structure presented in Figure 7.3.

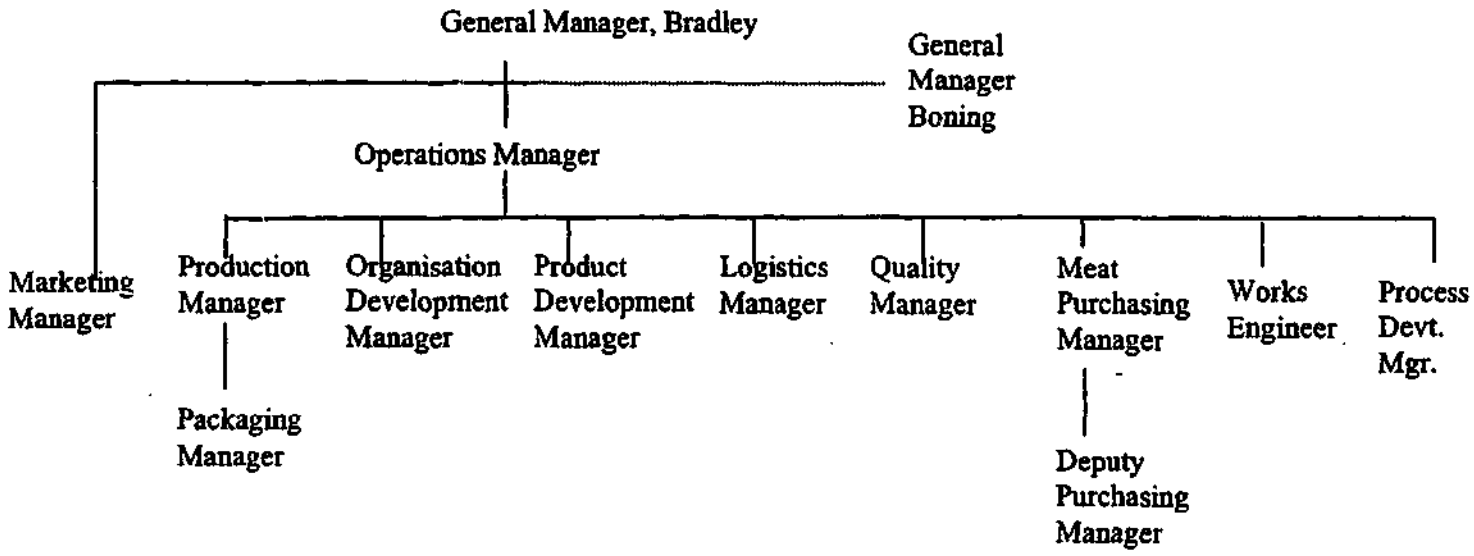


Figure 7.3 Partial Organisational Chart for Bradley

* The Boning Room is a separate company with an exclusive contract to bone pig carcases for Bradley.

The manager of the boning room which supplied the company with most of its meat was a member of the planning team for the whole process. This unprecedented size resulted from the structure of the meatworks and the desire of the Operations Manager to allow all interested managers to be involved. The facilitator, who was the researcher, responded to this size by minimising the teaching of concepts and maximising the practical work, largely in separate groups.

Seven team meetings were held over a period of seven weeks. Table 7.3 lists the main areas covered at each of the meetings. Meetings generally lasted two to three hours, with the final meeting lasting six hours.

In addition, the Marketing Manager attended a few meetings but was not committed to the process. The General Manager attended parts of meetings where his involvement was required for information or reporting findings.

A preliminary presentation to the General Manager, Operations Manager, Marketing Manager, Organisation Development Manager and Controller was held. The researcher

described the SOLP process and its potential to help the operations team create strategies and improve the strategic content of their management.

The Operations Manager called together the twelve managers on the team for a first meeting. The meeting started by the Operations Manager making a presentation in which he stated:

- five previous continuous improvement programmes had taken place over eight years at a cost of $1.5 million;
- no significant change in key performance indicators had taken place as a result of those programmes;
- in future Bradley needed to integrate the strategic direction of its operations with that of the whole business using a market driven management structure with both internal and external focus which would include logistics, packaging, procurement, product development and quality; and
- a product range could be represented by more than one product family where it had more than one significant distribution channel.

He then handed the meeting over to the facilitator who explained the use of Strategic Operations and Logistics Planning, the benefits that Bradley managers would obtain from such planning and gave an overview of the steps of the SOLP process. The General Manager summarised the key success factors required by Bradley and described his vision to have a 'more profitable, market-driven business'. One of the team members asked whether the process was to be 'one-off'. The Operations Manager said that the process was a new tool which would be used repeatedly as required.

The facilitator asked each team member to fill in a worksheet, the Profile of Market Requirements, for a first product-channel family, Fresh Sausage- Retail. Members considered the competitive criteria supplied, from previous meat processing companies, and added three new ones for their business. Table 7.4 shows how the criteria used at Bradley compare with those used at Flock and Wilson in this study and by Platts and Gregory (1988, p. 25). Administrative arrangements were discussed for when and where

Meeting	Items covered
Pre-meetings	Six were held with the Operations Manager, the last being a presentation to four other managers including the General Manager and Marketing Manager
1	• History of continuous improvement at Bradley by Operations Manager • 'What is strategic operations planning?' and SOLP process overview • Key success factors by General Manager • Profile of market requirements for one product family • Consider required competitive criteria • Administrative arrangements
2	• Assess achieved performance for first product family • Results of market requirements for first product family • Choose the four most important product/ channel families • Market requirements and achieved performance for three more families • Look at profile of performance versus requirements for first family
3	• Examine profiles of four product families and discuss implications • Determine product/channel families • Consider Order Winning Criteria, fill in individually • General Manager explains the business objectives for Bradley • First look at Current Operations Performance
4	• Share results for Order Winning Criteria, discuss & amend • Compare results for Current Operations Performance • Explain procedure for assessing operations strategy, in two groups • Choose two important product families and each sub-group consider Current Operations Strategy
5	• Sub-groups describe Current Operations Strategy for two families • Consider Current Operations Performance view of marketing and sales • Consider worksheet of Market Share and Contribution • Sub-groups fill out Strategy Derivation and Action Plan worksheets • Sub-groups explain proposed strategies to each other
6	• Customer presentation • Revise Order Winning Criteria • Choose two more families and fill in worksheets 6 to 8, in sub-groups • Review Action Plans for first two product families
7 -Longer	• Explain Distinctive Competencies and Performance Measures • Two sub-groups each complete two product Action Plans • Team critiques Action Plans • Best practice comedy video shown • Four members write presentations and trial them • Presentations to General Manager and senior executives • Discussion • Exit interviews

Table 7.3 Items covered at each meeting at Bradley's first SOLP process

Platts and Gregory	Flock	Wilson	Bradley
Delivery reliability	Reliability of delivery	Reliability of delivery	Reliability of delivery
Product features	Features (processing options)	Features (processing options)	Features (processing options)
Quality	Quality (attainment of specification)	Quality (attainment of specification)	Quality (attainment of specification)
Design flexibility	Flexibility of design (specification)	Flexibility of design (specification)	Flexibility of design (specification)
Volume flexibility	Response to variation in volume	Response to variation in volume	Response to variation in volume
Price	Price	Price	Price/ Cost
Delivery lead-time	Relationship building	Product Tracing	Packaging
			Food Safety
			Shelf Life
			After Sales Service

Table 7.4 Comparison of Competitive Criteria

the team should meet. At the end of the meeting the researcher interviewed members individually to measure their degree of understanding of strategic operations. The Marketing and Sales and Logistics Managers were absent from the first meeting.

The researcher met the Marketing and Sales Manager after the first meeting to persuade him of the need for SOLP at Bradleys and to brief him on the matters covered at the first meeting. The Manager felt that such operations planning should be delayed until market plans had been produced in six months' time. He was concerned that he would be forced to supply information which would subsequently prove to be incorrect because he had only been at Bradley for four months. Nevertheless he was convinced to take part in a planning process which would be limited to operations and logistics strategy driven by customer needs.

At the start of the second meeting, one week later, team members were asked to assess the Profile of Achieved Performance for the product-channel family Fresh Sausage-Retail. Next the results of their Profile of Market Requirement for that family were given to them. Figure 7.4 shows the results of both these Profiles. Members chose three more

Worksheet 1.1 **Profile 1** Initials: _____

Market Requirement (×) vs. Achieved Performance (O)

Product Family: Fresh Sausage - Retail

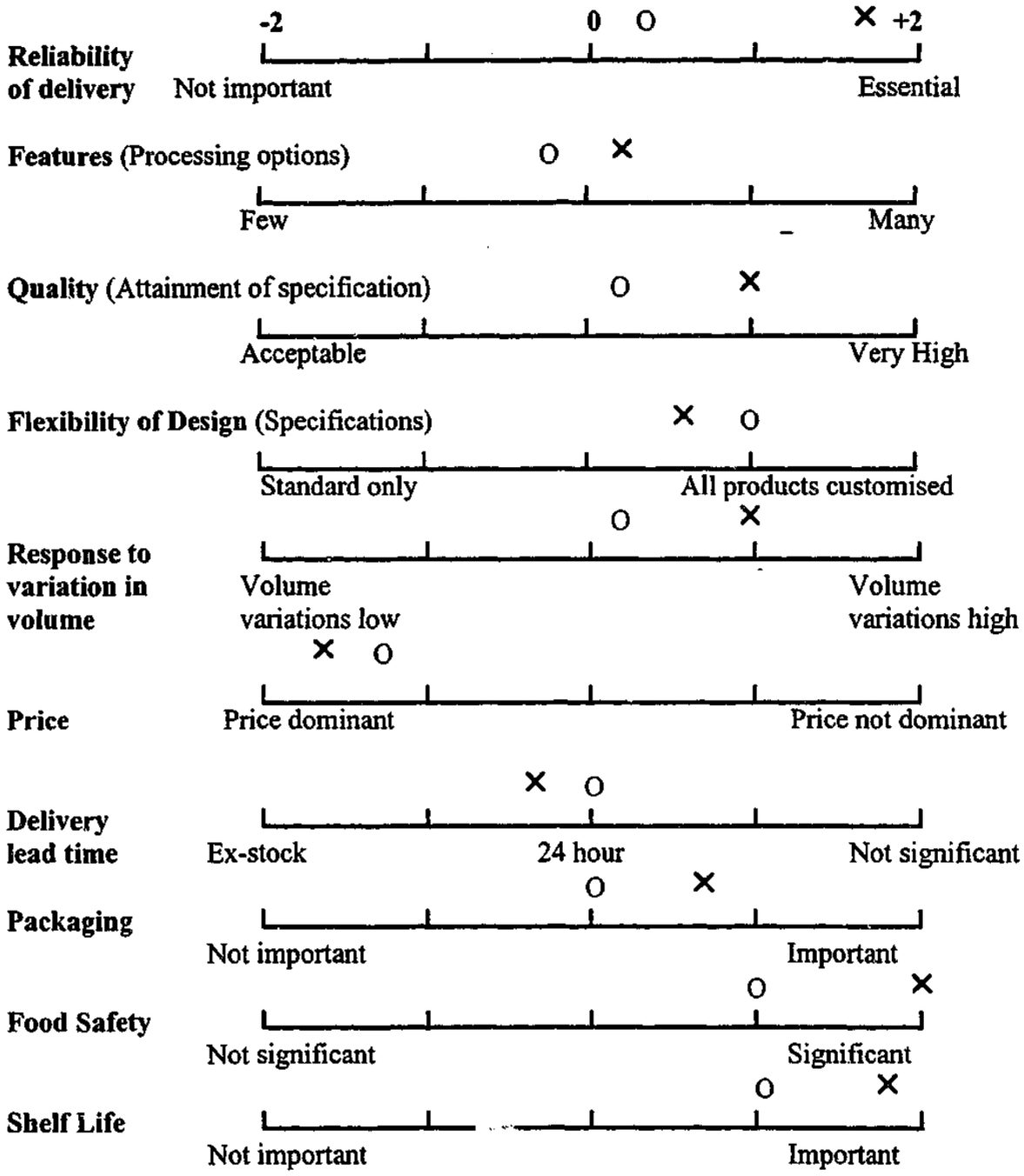


Figure 7.4 Profile of Market Requirement versus Achieved Performance

important product families, making a distinction between retail (supermarket) and route (delicatessen shops) chains of distribution to create two families for 'Frankfurters Bulk'. They were asked to think about what the full six to eight product families should be, to be decided at the next meeting. Members filled in Market Requirement and Achieved Performance profiles for the three new product families, filling in the sheets very quickly. The facilitator had compiled a rough chart which compared Market Requirement and Achieved Performance for Fresh Sausage-Retail as an average across the whole team. This caused lively discussion including varied understanding of the meaning of price, as a competitive criterion, and a comment by the General Manager that the work is only perceptions at this stage. The Marketing Manager represented the Marketing and Sales Manager at this meeting and the Warehouse Manager represented the Logistics Manager.

The third meeting took place on a Friday morning one week later. The team average results for the profiles for Fresh Sausage-Retail and three families of Frankfurters were circulated. This prompted much detailed discussion about presentation of the sausages and 'stock outs' after they had been promoted. To build on this discussion, members were asked to fill out the Order Winning Criteria worksheet for this product family. Next the team considered the product families to be planned, starting with the four already addressed and a list of twelve supplied by Marketing. After some discussion the product range was concentrated into seven product families. The Organisation Development Manager was appointed secretary. The General Manager came into the meeting to explain Bradley's business objectives as follows:

- 15% return on assets after tax;
- focus on the return to the shareholders; and
- consider brand, innovation of product and process, and people.

This explanation of objectives enabled team members to individually complete the Order Winning Criteria for the remaining six product families. Members were introduced to the Current Operations Performance worksheet and asked to complete it afterwards. A few days later the researcher had a meeting with the General Manager of the dedicated boning room, who had missed two meetings, to bring him up to date with the team's progress.

The fourth meeting took place one week later and lasted for three hours. The spread of results for Order Winning Criteria was shared with team members. This provoked good discussion leading to a team position. The compiled results for the Current Operations Performance worksheet were circulated. Members wished to get more input from the views of marketing people, outside the meeting, before drawing any conclusions. The procedure for assessing the required operations and logistics strategy working in two sub-groups was explained. Members chose two important product families. The team then broke into the two groups, which were chosen by the facilitator to provide representation from production, marketing and support functions in each group. Each group considered worksheet 6, the Current Operations Strategy, for their particular product family. One of the groups had some trouble understanding what was wanted. Possibly, providing examples would have made this easier.

The fifth meeting, a further week later, started by the sub-groups briefing each other on Current Operations Strategy for the two chosen families. Next the whole team considered the results of Current Operations Performance worksheets filled in by marketing and sales people. This was important as there was a lack of contact between operations and marketing departments. The worksheet of Market Share and Contribution Data was tabled, made more complicated by the information available being split between two main delivery channels, retail and route trades. Team members noticed how all their products were at the mature stage on their life cycle, confirming the need for new products to be developed. The team then split into its two groups, working in separate rooms, to decide the Strategies and Action Plans required for the first two product families. Each group then explained its proposed strategy to the other. Arrangements were made with the Sales Manager- Route Trade to arrange for a customer to attend the next meeting.

In the sixth meeting the team heard a customer, who owned a delicatessen shop in a suburb with high sales, describe what he felt was good and not so good about Bradley's products. He talked about his requirements and, for some operations members, it was a novel insight into customer thinking. Using this new information and the strategies derived for two product families, team members considered whether the order winners

had been achieved by the new strategies and hence agreed a final version of worksheet 3, Order Winning Criteria. Team members then chose two more important families and started to work through worksheets 6 to 8, Current Operations and Logistics Strategy, Strategy Derivation and Action Plans, for them. Again they worked in the same two sub-groups.

The final meeting, held a week later, was six hours long and took place in an off-site conference centre with the aim of completing the strategic Action Plans for four product-channel families and presenting them to the General Manager and other senior managers. The facilitator introduced the idea of distinctive competencies, by which a company may develop unique strengths in areas such as production processes and manpower skills so that it is prepared for future market needs. This raised few questions but a concern was voiced by several of the operations managers that there had been insufficient marketing input into the plans made. This concept of distinctive competencies is better introduced earlier in the process, but previously the team had not been ready, in the facilitator's opinion. The team then split into its two groups to complete the two Action Plans started at the last meeting. Each sub-group also appointed two of its members to present the two Action Plans for which it was responsible, so that they would have time to prepare their talk. After a light lunch, the whole team met together to critique the first two plans. The presenters gave a good description and there was a lively discussion. A short comedy video of 'Best Practice' examples in Australia (Australian Best Practice Demonstration Program, 1992) was shown to provide a little relevant light relief. Breaking into two groups again, team members proceeded to complete and revise the Action Plans for the second pair of product families. The whole team considered the further work that was needed. The facilitator and the Organisation Development Manager agreed to pull together the key parts of the work done and the presentations into a booklet for guidance during implementation.

When all the senior managers had arrived, the four members gave their presentations in turn, as follows:

1. presentation by the Product Development Manager on the product-channel family Fresh Sausage- Retail in which the main emphasis was to sell branded pork sausages for sale in supermarket dairy cases;
2. presentation by the Works Engineer on the product family Bacon with an emphasis on improved processing technology and moving a by-product of pig meat purchases;
3. presentation by the Packaging Manager on the product family Frankfurters Packaged with the wide aims of extending product range and quality whilst reducing cost; and
4. presentation by the Deputy Purchasing Manager on the product family Hams and Cooked Meats, emphasising significant increase in sales by developing a lower weight product.

The visitors were very interested in these presentations and the General Manager and the Controller asked many questions. Exit survey questions were answered by most members of the planning team.

There was close involvement of everyone in this meeting. The venue was excellent and focussed members on the job at hand.

A week after the meeting, the Organisation Development Manager, helped by the facilitator, issued a 19-page document "Strategic Operations and Logistics Plan for Bradley Smallgoods" which contained:

- Summary
- Strategic Business Objectives
- Market Data by Product Family
- Order Winners
- Operations Plan and Action Plan for four product families:
  - Fresh Sausage-Retail
  - Bacon
  - Packaged Frankfurts
  - Hams/ Cooked Meat

7.5.2 Second Planning Process at Bradley

Three months after the first process, Bradley's management decided to apply the SOLP process for a second time with four more product families. With a similar team structure,

but increased marketing representation, a further seven meetings were held. The Organisation Development Manager was appointed joint facilitator with the researcher by the Operations Manager. The Operations Manager, the facilitator and the Organisation Development Manager formed a steering committee which met before team meetings to consider the best way to pursue the planning process. After two meetings lasting three hours each, team members spent a whole day with a range of customers discussing the implications of their needs for Bradley's SOLP. This process application was pursued with more rigour than the first. Again a longer final meeting was held to complete strategies and action plans.

Table 7.5 lists the main areas covered at each of the meetings held. The twelve managers involved in all the meetings largely came from the operations, logistics and marketing functions, as shown on the partial organisation structure in Figure 7.3.

Two further sales managers were involved in the first three meetings, the Development Manager, Route Trade and the Sales Manager, Industrial Products. These two managers left the team when the team size was considered unwieldy.

The Marketing and Sales Manager, who had been obstructive during the first process, resigned whilst preliminary meetings were being held. This made it easier to involve the necessary sales managers. As in the first SOLP process, the General Manager attended parts of meetings where his involvement was required for information or receiving findings.

The facilitator held a preliminary discussion with the Operations Manager and the Organisation Development Manager to consider the involvement of the sales department, the products to be planned and the method of facilitation in which the Organisation Development Manager would take a lead role, assisted by the researcher. Next this steering group had a meeting with two senior sales managers. It was acknowledged that there was limited contact between operations, logistics and sales at Bradleys. It was recognised that progress had been made with four product-family-channel Action Plans in the first process. In particular, implementation of Fresh Sausage-Retail into Safeway, a major Australian supermarket chain, reached a very positive result. The need for

Meeting	Items covered
Pre-meetings	Three were held with the Operations Manager and the Organisation Development Manager, the second including two sales managers, the third being a presentation to four sales managers included in the new team
1	• Recognition of membership, chair, facilitator and secretary • Purpose is Game Plan for four product families • SOLP process overview • Re-assess Order Winners and Market Data • Choose two product families and groups to address them • Review market information available
2	• Market research questions and itinerary to visit customers • Presentation made on Strasburg • General Manager gave his expectations of Game Plan process
3 (Custom-er Focus tour)	• Briefing in conference room • Depart Bradley in bus to visit two markets, supermarket, deli/ restaurant and shopping mall • Debriefing on return journey and in conference room
4	• Alter team membership • Market Data information for two product families • Summary of tour findings for Strasburg and Packaged Frankfurts • Re-assess Order Winners for two product families • Reform sub-groups and appoint leaders for rest of process • Start to work on strategies in two groups • Members review Current Operations Performance
5	Working in two separate groups for most of meeting to complete: • Current Operations Strategy • Strategy Derivation • Action Plan
6	• Presentation on successful Action Plan from first SOLP process • Re-assess Order Winning Criteria for two more product families • Presentation of Action Plans for first two families • Complete Current Operations Performance worksheets for two families • In groups, complete Current Operations Strategy
7 (Longer)	• Complete worksheets 6, 7 and 8 for two families • Presentation on key Performance Measures and Distinctive Competencies • Prepare presentations • Presentations to senior executives • Discussion and Summary • Exit interviews

Table 7.5 Items covered at each meeting at Bradley's second SOLP process

operations managers to visit a number of customers was agreed. It was decided to hold meetings two hours in length every two weeks on Friday mornings. The first step was to present the work done in the first process to a meeting of sales managers.

The Operations Manager made a presentation to four sales managers, positions as described above, in the presence of the researcher and the Organisation Development Manager. The Operations Manager described the Action Plans derived for four product families in the first SOLP process and the actions which had already been taken on three of the four plans. He proposed to repeat the process for the rest of the product range, driven by customer input from the sales managers. There was discussion of the product families to examine in the second process and the need to consider new products such as Dips, which the existing plant can make. The presentation was well received and led to the first meeting of the second process a week later. Also the facilitator surveyed the sales managers, using the questions described in section 3.2.3, to obtain their initial understanding of strategic operations.

At the first meeting of the second Bradley SOLP process, members of the team assembled on a Friday morning in September, 1998. The meeting was chaired by the Manager, Organisation Development assisted by the facilitator. The membership of the enlarged team was recognised and the purpose, to formulate strategic operations plans for four more product families driven by sales input, was agreed. The facilitator gave an overview of the SOLP process, emphasising the definition of strategy as a pattern of decisions, the need to use policy decisions to achieve customer order winning criteria, and the use of worksheets 3, 6 and 8. He asked team members to re-assess the Order Winners for the new product families. This led to a lively discussion on the criteria which were most important in winning business for Bradley. The product families Bulk Frankfurters and Bulk Strasburg were chosen for first strategy formulation. The results of the Order Winners were discussed to reach a group consensus view. This led the team to consider how it could explore customers' needs in more depth through visiting several retail outlets and using commercial market research. There was a long discussion on what customers wanted besides brand and price. The Sales Manager, Route Trade and the

National Account Manager, Safeway were asked to review the Market Data for the chosen products. The team was split into two sub-groups for detailed work.

At the second meeting, three weeks later, the Sales Manager, Route Trade gave a presentation on the proposed customer visits. He addressed the questions to be asked and the itinerary of customer sites to visit during a whole-day bus trip. A presentation was also made on the marketing aspects of Bulk Strasburg. The General Manager addressed the meeting to explain his goals for Bradley. In summary, he wanted to sell more product, whilst spending less in making that product. This required Sales to work closely with Operations and Logistics. He was very pleased that the Fresh Sausage-Retail project had come from the first SOLP process through collective ownership. He wanted this second Game Plan to complete plans for a further four product families.

The third meeting, two weeks later, was called a 'Customer Focus Tour'. Table 7.6 supplies the aims of the tour and a sample of the questions posed by team members to retail customers and end consumers. All team members met in the Bradley conference room at 7 a.m. to be briefed on the procedure. The facilitator emphasised that this was an opportunity to review the Order Winners for Bradley's products directly with customers. Perhaps the most important aspect of the day was that permission was given for the operations and logistics managers to accompany the sales managers on a tour of customers. Some of them had never done this before.

Team members left Bradley offices in a large bus and visited two markets, one in a suburb where the mix of residents favoured purchase of smallgoods, and one in central Melbourne. Members went around in pairs to ask the retailers and their customers questions as indicated in Table 7.6. Later, members visited a Safeway supermarket, a new delicatessen which is also a restaurant and a shopping mall in the eastern suburbs of Melbourne. In the latter, an area where people are less likely to buy smallgoods, members were challenged to consider how many shops *could* be outlets for Bradley products. During the return journey and in the conference room, members were debriefed on their findings. A long list of observations on the precise needs of retailers and end consumers for all Bradley products was compiled. Members were very excited about their findings.

Worksheet 4, Current Operations Performance, was handed out to members for completion before the next meeting.

Aims at each store
• How does the quality of the opposition compare to ours?
• Compare quantity and spacing of our product to the opposition
• Compare price of our product to the opposition
• How does retailer order his/her product?
• What is the turnaround time from order to delivery?
• Is this the type of store in which we are proud to have our product offered?
• What quantity of our product is sold compared to competitors?
Sample of questions to ask consumers
• How often do you buy smallgoods?
• Why do you buy from this outlet?
• What product do you purchase?
• What do you use this product for?
• Why do you buy Bradley's?
• Why do you purchase the opposition's product?
• What would influence you to buy our product?

Table 7.6 Aims and questions on customer tour

The fourth meeting took place two weeks later. Membership of the team was reduced by the Development Manager, Route Trade and the Sales Manager, Industrial Products since the team size was considered unwieldy and the extra representation of sales could not be justified. This left twelve members in the team, the same number as in the first process. Market Data for the two product families under consideration were provided by the Sales Manager, Route Trade and the National Account Manager, Safeway. A summary of findings for Bulk Strasburg and Packaged Frankfurters on the tour of customer stores was provided by the leaders of the two sub-groups. This led to a re-assessment of Order Winners for the two product families to see if any changes were needed as a result of the customer tour. The two sub-groups were reformed with the amended membership and leaders were appointed for the rest of the process. The sub-groups worked separately to review Current Operations Performance and to fill in worksheet 6, Current Operations Strategy. Members were asked to work in pairs on this worksheet so that a variety of views were obtained in each group. During the first process, the later worksheets were

filled in by group members working together, which the facilitator considered unlikely to generate a wide enough range of possible strategies.

Two weeks later, the team held its fifth meeting of the second process. The two groups worked separately on the Current Operations Strategy, Strategy Derivation and Action Plan worksheets for their respective product families for the whole of the meeting.

The sixth meeting, two weeks later, started with a review of the Action Plan previously formulated for Fresh Sausage-Retail by the Product Development Manager to confirm the implementation of the actions. The Logistics Manager, who had put in his resignation, was represented by the Warehouse Manager at this meeting. Order Winners for the second pair of product families, Industrial Products and Dips, were re-assessed to see if any changes were needed. The Action Plans for the first two product families were presented to the whole team by their respective leaders. This led to a discussion on the need to provide Strasburg in smaller units and pre-sliced. The team then broke into the two groups to review Current Operations Performance and Current Operations Strategy for the second two product families.

The final meeting was held at an off-site conference facility some two weeks later, just before Christmas, 1998. The full team assembled at 10 a.m. and proceeded, working in two groups, to complete worksheets 6, 7 and 8 for the second pair of product families. At the same time the respective leaders for each product family began to prepare a description of the strategy and a presentation, to be given to senior managers at the end of the day. Next the facilitator made a presentation to the whole team on the need for Performance Indicators in a number of areas to measure progress in strategy implementation. This presentation used the work of Kaplan and Norton, 'The Balanced Scorecard' (1996, p. 53-79). After lunch, the leaders prepared their audio-visual presentations.

At 3 p.m. the senior managers arrived and the presentations commenced. The new arrivals were the Human Resources Manager, the Financial Controller, the National Account Manager – Coles , the Sales Manager- Industrial Products and the Purchasing Manager – Dry Goods. The General Manager was unable to be present because he was

attending an overseas conference. First the Operations Manager gave a brief review of the four product family strategies crafted in the first SOLP process. With the exception of one family (Hams and Cooked Meats), all strategies were being implemented. The Operations Manager elicited the status from each team member involved in implementation of each plan. Next the Manager, Organisation Development spoke about the strategy for the first new product family, Bulk Frankfurters, on behalf of the six members who had derived that strategy. There was little interaction with the visitors. Then the Logistics Manager presented the team's strategy for Industrial Products. A key point was the need to attain MSQA (Meat Safety Quality Assurance certification) in the next three months. The Sales Manager, Industrial Products was given approval to set up a multi-disciplinary team to achieve this certification. The third product family strategy was presented by the Quality Manager on Bulk Strasburg. She used excellent graphics to show the slow decline of this product which is expensive in materials and labour-intensive to produce. The proposed strategy comprised a new product offer with increased shelf life and after-sales support. The National Account Manager, Safeway presented the strategy for the fourth family, Dips, using graphic slides and worksheets. This strategy, which dealt with an area entirely new to Bradley, estimated that the company could sell 5.5 tonnes per week of Dips to gain a 6% share of the product market. Discussion centred around the ease with which other players could enter this market.

The Operations Manager wound up the meeting by summarising the status of SOLP planning at Bradley. He undertook to convey the results to his superiors and to the shop floor, especially highlighting Fresh Sausage-Retail and Packaged Frankfurters, where significant process changes were made to the business. He foreshadowed that the multi-functional team would come back together in the new year to formulate strategies for another four products over the next six months. He thanked the facilitator for his valuable work in providing the SOLP process to the team. The facilitator handed out exit interview surveys to members of the team. Most of these were filled out immediately; the others being returned over the next few weeks. The whole meeting lasted from 10am. to 5pm.

The output from this second process was circulated by the Manager, Organisation Development with the agenda for the next meeting of the planning team. The output

comprised the Action Plans for the eight product families produced during the two planning processes. Since a key reason for applying the process at Bradley was to extend it to the integrated supply chain, Table 7.7 demonstrates the extent of actions involving the supply chain included in each plan. With one exception, strategies for all product families included at least one action involving external parts of the supply chain for smallgoods.

First Process		Second Process	
Product Family	***Actions involving supply chain***	***Product Family***	***Actions involving supply chain***
Hams	Distribution	Industrial Products	Vertical integration, suppliers and distribution
Frankfurts Packaged	Suppliers and distribution	Bulk Frankfurts	Suppliers
Bacon	None	Bulk Strasburg	Distribution and product development for trade
Fresh Sausage-Retail	Distribution	'New product'	Suppliers and distribution

Table 7.7 Supply chain actions by product-family-channel

7.6 Observations and Interview Outcomes for Extended SOLP Process

This section describes observations made during two SOLP applications at Bradley meatworks, made possible by Action Research, and assesses the outcomes of the interviews of team members involved in each application.

7.6.1 Observations of Extended Process

Longitudinal observation of two extended SOLP processes at Bradley smallgoods manufacturing company gave several research outcomes. As at the two previous meatworks, by acting as facilitator, the researcher was able to gain a detailed understanding of the place that SOLP played in the work of the team members and the structural and infrastructural organisation of the business. The outcomes, which are addressed in turn, are:

- development of Order Winning Criteria;
- observation of operations and logistics Decision Areas;

- measurement of stage of evolution of operations strategic role; and
- strategies developed, extent of implementation of Action Plans and business outcomes.

7.6.1.1 Order Winning Criteria

Using the theory developed in section 5.2.3, this sub-section describes the Order Winning Criteria (OWC) used by the Bradley team. Table 7.8 compares the OWC used by the Bradley team with those used by Flock. The differences between the two columns show that the Bradley team used similar OWC to Flock except that:

- Price was changed to 'Price/Cost' to emphasise the cost elements that the operations and logistics functions control;
- Relationship building was omitted (this probably signifies a relative maturity in Bradley's chain relationships rather than a lack of importance of supply chain issues); and
- Three new OWCs were added, packaging, food safety and shelf life, to focus attention on important aspects of Bradley's smallgoods business.

7.6.1.2 Decision Areas

Applying the strategy content concepts developed in section 5.2.3, a number of Decision Areas were used to provide the policy dimensions needed by managers to choose operations and logistics actions. These chosen areas were then recorded in Action Plans. Table 7.9 shows that the same Decision Areas were used at Flock and Bradley with the addition of 'Relationships' as a logistics area at Bradley. The last two columns in Table 7.9 shows the number of times each Decision Area was used in four Action Plans derived by the Bradley team in each planning process. The most prevalent Areas are facilities, process and technology, human resources and new products. There are more decisions in supply chain areas in the second Bradley process compared to the first.

Flock	Bradley
• Delivery Reliability • Features (processing options) • Quality (attainment of specification) • Flexibility of Design (specifications) • Response to variation in volume • Price • Relationship building • Other	• Delivery Reliability • Features (processing options) • Quality (attainment of specification) • Flexibility of Design (specifications) • Response to variation in volume • Price/Cost • Packaging • Food Safety • Shelf Life

Table 7.8 Comparison of Order Winning Criteria between two meatworks

Flock		Bradley		
Area	*No. +*	*Area*	*First Process No. +*	*Second Process. +*
Facilities (Works)	7	Facilities (Works)	12	8
Capacity	2	Capacity	5	4
Vertical integration	3	Vertical integration	-	2
Processes and Technology	3	Processes and Technology	9	14
Human Resources	6	Human Resources	5	10
Quality	2	Quality	4	7
Control Policies	0	Control Policies	5	3
Producer*/ Suppliers	7	Producers*/ Suppliers	2	8
Distribution	4	Distribution	2	3
New products	1	New products	8	9
		Other	2	1
		Relationships	-	1

Table 7.9 Comparison of Decision Areas and their prevalence in two meatworks

* Producers means farmers

\+ Column indicates number of proposed actions in each Decision Area across all four Action Plans

7.6.1.3 Operations and Logistics Strategic Role

In the same way as at Flock and Wilson, the researcher's observations during the SOLP process enabled the stage of evolution of operations strategy to be classified (Hayes and Wheelwright 1984, p. 396-401) at Bradley. The assessment of Bradley's characteristics was confirmed by comparison with the assessments at the other two meatworks (refer sections 6.1.2.3 and 6.2.2.3). The assessment at Bradley (Table 7.10) implies that it was in stage 3, that is 'Internally Supportive'. This is a higher stage of strategy development than the two other meatworks.

Stage	Characteristic (abbreviated)	Bradley
1	External experts used	No
	Control systems to monitor	No
	Flexible and reactive	No
2	Industry practice is followed	No, better
	Planning horizon is one cycle	Yes
	Capital investment	No, better
3	Investments are screened	Yes
	Changes in strategy translated	Yes
	Longer-term developments	Yes, approximately
4	Anticipate the potential	Yes
	Centrally involved	No
	Capabilities in advance	No

Table 7.10 Assessment of Characteristics of Strategy Evolution for Bradley

7.6.1.4 Strategies, Action Plans and Business Outcomes

Comprehensive but concise strategies were derived for eight families of products in the two processes, covering the bulk of Bradley's current business and one possible new product area (Dips). Whilst the team had filled in a set of seven worksheets for each product family, the only worksheets collated for future reference were the Action Plans, which contained the actions required in each operations and logistics policy area arranged in time sequence over the next three years. These plans were compiled into a planning document, 'Game Plan Meeting' (Organisation Development Manager, 1999), which was circulated with the agenda for the first meeting of the third SOLP process at Bradley. The

Action Plans (refer Table 8.6 for an example) are considered to be the most important output from the formulation process for the company.

A review of the extent of implementation of action plans at Bradley meatworks shows the following in October, 1999:

Process 1 (completed June 1998)

- Fresh Sausage-Retail - full implementation,
- Packaged Frankfurts - full implementation,
- Bacon - full implementation completed, and
- Hams - little action because recommendations were unrealistic.

Process 2 (completed December 1999)

- Frankfurts Bulk - good recommendation but not yet implemented,
- Industrial Products - successful implementation,
- Bulk Strasburg - successful implementation, and
- Dips - used as training in approach to new products: action postponed because not timely to introduce.

This is considered a high rate of implementation of strategic plans for both processes.

The strategic changes made as a result of the Fresh Sausage-Retail plans are considered a major success by Bradley management. A year after the plan was completed 15 tonnes per week of product is being sold to the two major supermarket chains for sale at $9.00 per kilogram in the dairy section of stores. This represents an annual turnover to Bradley of about $3.5 million, from a previous level of about $0.3 million.

7.6.2 Assessing Managers' Understanding of SOLP at Bradley

Structured interviews to determine the degree of understanding of strategic operations were carried out at the start and the end of both the SOLP processes at Bradley. The second interview represents both the end of the first process and the start of the second process. The following is a summary, across eleven team members (twelve in the second process), of the views expressed in the interviews. Where the total frequency is less than

these numbers, one or more members made no response to the question. The findings from the interviews will be described sequentially for both sets of questions. A summary of the interviews is supplied in Appendix 4 for both processes.

The average proportion of time considered spent on three kinds of decisions by the managers is shown in Table 7.11. The table shows that a greater perceived amount of time was spent on strategic decisions by the average Bradley manager compared to Flock (5%) and Wilson (5%). There is no significant change between the proportion of time spent on each type of decision from before the SOLP processes compared to afterwards.

	Average Proportion of Time, %		
Type of Decision	Before process 1, n = 11	After process 1, n = 11	After process 2, n = 12
Running	45%	41%	46%
Tactical	29%	36%	33%
Strategic	26%	23%	21%

Table 7.11 Time spent on various decision types (Bradley)

At each interview, the team members at Bradley were asked to nominate the three policy areas in which each had the most involvement. Table 7.12 show the results of this assessment. Answers were constrained by the list supplied which comprised the twelve areas in the table. Quality is seen to be the most prevalent policy issue followed by human resources, control policies and new products. The last four policies, from Route Trade (which is a system of company delivery to small retailers) to Retail were added at the end of the second process because the team included several members from the sales area with different policy issues. This makes the comparison between columns less precise, but was important to allow the new members a representative spread of policies.

	Frequency		
Policy area	**Before process 1**	**After process 1 n=11**	**After process 2 n=12**
Quality	6	7	4
Human Resources	4	3	3
Control policies	3	4	3
New products	3	2	3
Meat Supply	2	4	3
Processes	2	3	7
Facilities	1	2	2
Vertical integration	1	1	0
Capacity	0	5	1
Route Trade	n.a.	n.a.	2
Distribution	n.a.	n.a.	2
Marketing	n.a.	n.a.	1
Retail	n.a.	n.a	1

Table 7.12 Number of managers involved in policy areas (Bradley)

(n.a. means 'not applicable')

The number of team members who had decisions in the 'too hard basket' increased from none out of six before the first process to two out of ten after the first process to three out of eight after the second process. This is considered to represent concerns of one or two members plus concerns with the proposed sale of the business. The number of team members who felt their ability to make strategic or tactical decisions was impaired by a situation or a person decreased steadily from 67% (6 of 9 responses) before process 1 through 64% after process 1 (7 of 11) to 55% (6 of 11) after the second process.

Bradley team members' answer to the question 'What have you achieved by means of the planning process?' was examined both between the two processes and after process two (Refer Table 7.13). Answers were split between the top three responses on each occasion with a slight trend towards members focusing on the specific improvements that would benefit their area. When answers were prompted, there was widespread feeling that strategic management had improved. After the first process, five of the eight responses were in the affirmative, with two saying it was too soon to tell. After the second process, eight out of twelve responses saw an improvement. The great majority of members felt

closer to others as a result of SOLP both times the question was asked. Interestingly, the number who had taken actions personally as a result of the process increased from three out of nine after the first process to seven out of twelve after the second process.

Questions	Answers	After process 1 (out of 10)	After process 2 (out of 11 or 12)
What have you achieved?	Team approach	4 / 10	3 / 11
	Strategic direction	4 / 10	4 / 11
	Specific improvements	2 / 10	4 / 11
Prompted answers	Better strategic management	5 / 8	8 / 12
	Closer to team members	8 / 11	9 / 12
	Actions taken	3 / 9	7 / 12

Table 7.13 Achievements as a result of the process (Bradley)

In answer to the question 'What needs to be done to improve the development of Bradley's business?' the predominant response from the team members at the end of the first process was to improve marketing or integrate sales and operations, as indicated in Table 7.14. By the end of the second process, members considered this concern with sales and marketing had been largely addressed and they outlined a large number of different developments. A constant theme in both sets of interviews was the need for strategic direction, although one would think this was being addressed by the SOLP process.

Response	Frequency after process 1 (out of 12)	Frequency after process 2 (out of 12)
Integrate sales and operations	3	0
Improve marketing	2	1
Strategic direction	3	3
Understand customer needs	1	1
Management restructure and increased delegation	1	2
Improve pigs & meat supply	1	1
Develop team culture	1	1
Strategic alliances	0	1
Maintain quality	0	1
Install integrated computer system	0	1

Table 7.14 Requirements for business development (Bradley)

Team members were asked the question 'Which is the most important area of business for the future?' at the end of the process. The answers after process 1 exceed the twelve members because several gave two responses. Reference to Table 7.15 shows that the predominant answers were in marketing areas. This can be interpreted as a genuine area of concern, or operations people looking for someone outside their area to criticise. All members were personally taking action to support the areas they saw as the most important for the future, after both processes. In response to the question 'Is anything inhibiting action in this important area?' (i.e. their nominated area), eight of the twelve members considered that action was inhibited after the first process and nine out of twelve after the second. There was no common thread to cause inhibition.

	Frequency after process 1 (out of 15)	**Frequency after process 2 (out of 12)**
Marketing, general market development	4	3
Particular market areas	3	3
Common direction	3	0
Relate to customers	1	2
Operations & machinery	2	1
Product development, innovation	0	3
Other	2	0

Table 7.15 Important future business area (Bradley)

After each process, team members were asked to think about the SOLP meetings held and consider which areas of the work done were helpful. The answers are summarised in Table 7.16 wherever more than one person identified them. After the first process the most frequent responses were 'operations planning approach', 'examine individual product families' and 'communications between team members'. Only the third of these responses was important to nearly half the members after the second process, in which no other answer was given by more than two members. The next question asked members to nominate areas which could be improved. Table 7.17 compares the responses after each process. Answers represent individual views without any common thread after either process.

Response	Frequency	
	After Process 1	After Process 2
Operations planning approach	5	2
Examine individual product families	4	1
Communications between team members	3	5
Order Winners and customer needs	3	2
Implement programmes	2	2
Involvement of General Manager	2	0

Table 7.16 Helpful areas of process (Bradley) (n = 12)

Response	Frequency	
	After Process 1	After Process 2
Lack of sales involvement	2	1
Poor continuity between meetings	1	-
Preamble obscure	1	-
Process was a little rushed	1	-
Time schedule/ process slow	2	1
Members take problems personally	1	-
Use of order winners and qualifiers	1	-
Implementation problems	-	2
Lack of longer-term thinking	-	1
Reduce length of meeting to 2 hours	-	1
Some members not own outcomes	-	1
Include more supply chain people	-	1
Lack market understanding	-	1
Lack information to make decisions	-	1

Table 7.17 Areas of process requiring improvement (Bradley) (n=12)

The views of members on the success of the facilitator were sought by the question 'What should the facilitator have done to improve meetings?' After the first process, four of the twelve members did not find fault with the facilitation. However, one member suggested each of the following improvements:

- Reinforce SOLP process
- Do one product family at once
- Set tighter deadlines

- Remove obstacles to progress (7 members)
- Go slower and use hard data
- Have short, frequent meetings

After the second process, none of the members found fault with the facilitation. This is an interesting change which may be due to the acceptance of successful outcomes rather than any improvement in the process facilitation.

Members were asked the key question 'Has the strategic planning improved your performance?' Their answers, which were supported by the reason why they considered their performance had improved, are summarised in Table 7.18.

Response	After Process 1	After Process 2
Yes	7 out of 12	7 out of 11
Unsure	4 out of 12	3 out of 11
No	1 out of 12	1 out of 11

Table 7.18 Recognition of improved performance (Bradley)

Team members were asked the question 'What contacts with outside organisations will you now make?' after each planning process. After the first process, all members except one nominated new outside contacts that they intended to make. These new contacts were mainly supply chain partners, such as customers and suppliers. After the second process, only five of the twelve respondents nominated new contacts. This reduction may have been caused by the sale of the business. Members were also asked how they expected their performance to improve as a result of the outside contacts. After the first process, the main reasons given were

- Industry knowledge (3 responses),
- Consumer attitudes (2), and
- Technical help (2)

After the second process, somewhat different reasons for the outside contacts were given:

- Ideas to improve business (4 responses),
- Supplier alliances (2), and

- Market information (1)

In response to the question 'Are other members of Bradley's supply chain important to your job?', all members responded 'Yes' after the first process and all members except one responded 'Yes' after the second process. All these responses were supported with valid reasons for this importance of supply chain contacts. Table 7.19 shows that the majority of reasons given for the importance of the supply chain, after both processes, were integration of the chain and assistance to the member's own area. The number of members focussing on assistance to their own area dropped after the second process.

Reason	**Frequency reason was given**	
	After process 1 n = 12	*After process 2* n = 10*
Supply chain integration	4	3
Own specific area	4	2
Supply of materials	2	1
Customer information	2	2

Table 7.19 Reasons for importance of supply chain contacts (Bradley)

* 1 member said 'not applicable'; 1 did not answer

Because Bradley was placed on the market by its owner, the question 'Is a difficult ownership situation making it harder to plan at the moment?' was asked. After the first process, 45% of the team members considered planning was made more difficult, whilst after the second planning process this had reduced to 27%.

The extent to which team members were now interested in further training in strategic management was investigated by the questions 'Would you be interested in personal development in strategic management' and 'What do you wish to be addressed?'. The answers, summarised in Table 7.20, showed a great majority interested in such training. The answers were varied, with 'planning one's own function' and 'planning information' the only areas to be addressed by more than one member.

	After process 1	After process 2
Would you be interested in personal development in strategic management?	Yes – 9 No - 1	Yes - 10 No - 1
Area to be addressed	Frequency	Frequency
Strategic thinking	1	1
Own business function	2	-
Supply	1	-
Short versus long-term conflicts	1	-
More SOLP exposure	-	1
Information	-	2
Other organisations	-	1
Outside studies	-	1

Table 7.20 Requirement for further training (Bradley)

A final question invited team members to make any other comments about strategic planning for Bradley. This elicited the following responses by the number of members indicated after each process:

After first process

- Worthwhile process (2)
- Lack of sales involvement (3)
- Extend to business plan (2)
- Use real information and include logistics (1)

After second process

- Worthwhile process (3)
- Process should be more visible in company (3)
- Wider levels of employees should be involved

These unprompted responses show a good level of satisfaction with the SOLP process. The concerns over sales involvement and extension of the work done into business planning appear to have been dealt with by the time the second process has taken place.

At this stage, members were thinking more about communicating the work carried out to a company-wide audience.

7.6.3 Post-SOLP Implementation Interviews at Bradley

The researcher visited Bradley Smallgoods company eight months after the second SOLP process finished to pose some questions to two senior managers to determine their view of the effect that the process had on their company. The managers were chosen because they had a broader view of the process than the other team members. These questions (refer Appendix 5) were chosen to illuminate the research propositions (refer section 5.4). Table 7.21 documents the responses by each manager.

This concludes the outcomes from the two extended SOLP processes at Bradley smallgoods meatworks. Analysis of the meaning of these outcomes and comparison with outcomes at the other meatworks is given in Chapter 8.

Question	Responses	
	Operations Manager	*Organisation Dev't. Manager*
1. Did team members obtain a vision?	Realised what is/ is not important	Started to identify resources needed
2. What verifiable outcomes resulted? - $ spent - Processes changed - Team relations & actions	 $ 250,000 + $130,000 Fresh Sausage, Bacon Sales involvement in business direction	 - Fresh sausage Enabled people to think more widely
3. Plans developed without Game Plan?	Hard to say, yes, decisions made.	Fresh sausage would not have happened
4. Did Game Plan contribute to better decisions?	Gave us an O & L** - wide planning process	Yes, between Sales and Operations
5. Improved management performance? 5a. Targets gained though Game Plan?	Yes, in Sales and O&L All KPI's increased	Yes, no longer work in isolation Fat unacceptable, new packaging
6. How important to have external facilitator?	Very: allows clearer thought pattern	Extremely, stubborn people needed someone credible
7. Anything missing from Game Plan process?	No, but needed clearer business direction	Missing sales. Not sure focussed on logistics plan outside F. Sausage
8. Has GP* motivated managers to pull together?	Yes, sales/ operations wall pulled down	Yes
9.Were O & L strategies combined? 9a. Is it important to plan O & L together?	Yes Yes, whole channel	Only in Fresh Sausage. Yes, needs more success
10. Other strategic initiatives since Game Plan? 10a. Due to GP process?	Yes: Improved formal communications Yes	Not really, in spite of attempts -
11. Did GP improve O & L** performance?	Definitely: F. Sausage & product quality	Yes, sales up 10%, new products, etc.
12. Did members gain longer view? 12a. Does this help with strategic decisions? 12b. Example of such a decision?	Partially Yes, morale improved 2 ops. people into sales	Somewhat. - Packaging, better problem solving
13. Were GP strategies communicated through management team? 13a. Did this affect performance?	Yes, several times Yes, heightened its importance	Yes, by presentations at end of SOLP Yes
14. Is Meat Industry significantly different to other manufacturing industry?	No, although very complex. Food safety paramount	Yes now, due to food safety. Handling raw food needs to change
15. What changes would improve Game Plan?	Have strong business plan from corporate	Make working groups more accountable

Table 7.21 Questions some time after the SOLP process at Bradley

* GP means Game Plan ** O & L means Operations and Logistics

CHAPTER 8

ANALYSIS OF SOLP APPLICATIONS AND FINDINGS

"I came to see that an objective view of the facts was one of the most important aspects of successful management." (Geneen 1996).

This chapter analyses the results from four applications of the Strategic Operations and Logistics Planning (SOLP) process in meatworks, described in Chapters 6 and 7. In the second section the extent of support for the propositions is gauged. These propositions are used as a link between research hypotheses and data collected whilst observing the SOLP process and from the responses to the interview questions at the three meatworks. The research investigates whether the same type of result is found in different applications. In the third section, the findings from all research phases are used to gauge the degree of support for each research hypothesis.

8.1 Results from observing the SOLP Processes

Results obtained from the four meat industry applications using the process applications, described in Chapters 6 and 7, are discussed in five areas (refer Table 8.1):

- formulation stages;
- competitive priorities, decision areas and strategy stage;
- strategies developed;
- support for the process; and
- comparison of outcomes of later interviews.

8.1.1 Formulation stages

The twelve steps identified in the SOLP process, refer section 5.3.2, have been simplified into five formulation stages as shown in Table 8.2. This table also shows the relationship

between stages used in the Manufacturing Audit Approach (Platts and Gregory, 1992), the twelve steps which SOLP requires and the five stages into which SOLP is simplified

	Flock	Wilson	Bradley	
			Process 1	*Process 2*
Formulation Stages				
1. Motivate team and derive product families	✔	✔	✔	✔
2. Determine order winning criteria	✔	✔	✔	✔
3. Create vision of fi ctional structure	✔	Unsure	✔	✔
4. Understand current strategy	✔	✔	✔	✔
5. Formulate strategies required (Sequenced Action Plans)	✔	Quality moderate	✔	✔
Number of product Action Plans	4	4	4	4
Internal and external logistics	✔	✔	✔	✔
Supply Chain partners involved	No	No	Yes	Yes
Process Supports				
• Group consensus obtained	✔	Partial	Reason-able	✔
• Tailored to company	✔	Not sufficient	✔	✔
• External facilitation	✔	✔	✔	✔
Size and composition of team				
Total size	7	8	12	12
Number of directors	1	2	0	0
Number of operations managers	2	4	5	5
Number of marketing managers	1	2	1	2
Number of meetings held	7	7	7	7

Table 8.1 Comparative success of process applications and team composition

Legend: ✔ indicates successful application

Manufacturing Audit Approach Steps	SOLP Steps	SOLP Stages
1. Competitive Profiles	1. Assess Market Requirement on Competitive Criteria by product family	1. Motivate team and derive product families
	2. Assess Achieved Performance on Competitive Criteria by product family	
2. Select Product Families and collect Basic Data by family	3. Determine Product Families	
	4. Market and Contribution Data by product family and Business Objectives	2. Determine Order Winning criteria
3. Identify Competitive Criteria by product family	5. Order Winners and Qualifiers	
	6. Customer Interaction	
	7. Create Vision of functional structure and Distinctive Competencies	3. Create Vision of functional structure
4. Achieved Performance on competitive criteria by product family	8. Current Operations Performance on order winning criteria by product family	4. Understand Current Strategy
5. Opportunities and Threats	Not used	
6. Assessing the current manufacturing policies	9. Current operations and logistics strategy by policy areas and order winners for each product family	
7. Action worksheet	10. Strategy Derivation by product family by policy areas	5. Formulate strategies required
	11. Action Plan, time-phased by product family	
	12. Strategy Description by product family	

Table 8.2 Comparison of MAA and SOLP Formulation Stages

for the purpose of analysis. In addition to the five stages, comments are made about the effect of incorporating logistics into the SOLP process. The content and findings from each of the five stages are as follows:

1. *Motivate team and derive product families* – This stage consists of two elements: a task to raise members' awareness of the gains available through strategic planning and a splitting of the product range into families. The first element in the stage is designed to inform team members that their company is not achieving what the market requires on some of the competitive criteria important to customers. This element increases their motivation to continue the process. In the second element, the range of products manufactured is grouped into families (or product channels in the case of the supply chain-wide process), which require similar processes and strategies. This stage is a major support to the effectiveness of the SOLP process. The task of deciding upon product families starts managers thinking in a novel, customer-supportive way. The completion of separate strategies for product families is an important part of manufacturing and logistics process differentiation, which builds customised strategic vision for each family. This stage was successfully accomplished in each application.

2. *Determine Order Winning criteria* – This stage aims to discover the importance of specific criteria for customer satisfaction by product family. Market and contribution data is gathered for each product family so that they can be ranked in importance. The criteria, which must be attained to qualify for the company's markets and to win business in them, are assessed for each product family. Interviewing a major customer is part of this stage, which was successfully carried out in all four applications. This is demonstrated by the completion of step five (refer section 5.3) and its use deriving operations and logistics strategies.

3. *Create Vision of functional structure* – This stage aims to have members audit their current achievements, free their thinking to consider more alternatives, and devise a 'vision' (refer section 3.3) of the approximate operations and logistics structure needed to win customer business. Team members visualise the structure of operations and logistics which would be most likely to win business in the future, when customers'

needs have evolved. This should include the assessment of a number of distinctive competencies which would help to meet these future customer needs. Stage 3 is a key part of the process. However, it is difficult to describe because it exists in the minds of team members, rather than on particular worksheets. It is demonstrated when team members derive the new strategies required to attain future operations goals in Worksheet 6. Such a vision was obtained at Flock and at both processes at Bradley. The vision that resulted at Wilson was attained by the two directors but not by other team members and there were fewer verifiable outcomes from the SOLP process.

4. *Understand Current Strategy* – The purpose of this stage is to measure roughly the extent that the current strategy achieves future requirements. The current performance of operations and logistics on the order winners already identified is assessed for each product family. The current operations and logistics practices in ten policy areas are typified and their ability to achieve the order winning criteria is assessed. This stage was successfully completed in all applications, as demonstrated by the completion of step eight (completion of Worksheet 6, Current Operations Strategy, refer section 5.3.2) and its use to drive the later steps.

5. *Formulate strategies required* – This stage uses the previous foundation to create the strategic actions required by each product family to move towards future goals. The actions necessary to achieve those new policies are decided and sequenced, for each product family. A description of the reasoning behind each strategy is written for each product family. This strategy formulation was successfully completed at Flock and Bradley but only partially successfully completed at Wilson. The prime indicators of this stage are the construction of time-sequenced Action Plans and the implementation of some or all of those Plans. Action Plans were derived for four product families in each process application (see Table 8.1). One Action Plan was implemented at Flock, with the building of new facilities for chilling and freezing beef at a cost of $1.5 million. Three Action Plans were implemented as a result of Bradley's first process, with the change of process and marketing of Fresh Sausage-Retail and the installation of new machinery for Packaged Frankfurts. Two Action Plans were implemented after Bradley's second process, with the initiatives to re-

invigorate the Bull: Strasburg product. Whilst Action Plans were derived for four families at Wilson, they were less convincing and implemented to a lesser degree. The derivation of Action Plans is considered of over-riding importance in the success of the SOLP process. Action Plans provide sufficient information for implementation and they are succinct reminders of the agreed plans for product families. Experience shows that they are referred to many times during implementation. The main emphasis of the strategies implemented by the Action Plans is discussed below.

The incorporation of logistics into strategic operations planning is an extra part of formulation which permeates all stages of SOLP. Incorporating logistics requires the addition of logistics variables into competitive criteria and policy variables, and the inclusion of logistics elements with operations strategy. An example of competitive criteria for logistics is supplier relationships. Examples of logistics policy variables are suppliers and distribution. This incorporation of logistics is very important in the current commercial situation because of the strong competition in the meat industry, the increasing emphasis on food safety and the increased sensitivity of customers to the nutritional value and the source of their food. Also managers from the logistics function of the company are included in the planning teams. This incorporation was successfully achieved with internal and external logistics at all three companies.

A further extension into logistics requires the SOLP process to be undertaken by all partners, or links, in the supply chain from farmers to retailers (refer Chapter 7). It requires the supply chain partners to plan for the whole supply chain. This was not done at Flock or Wilson. At Bradley, there was some involvement of supply chain partners in both processes. The General Manager of the Boning Room was included on the team, and there was a conscious attempt to plan for the whole supply chain. This supply chain planning was successful to the extent that the supplier was fully involved in the process, but did not achieve balanced planning for all levels in the supply chain.

8.1.2 Order Winning Criteria, Decision Areas and Strategy Stage

A second set of findings from observing the SOLP process involves the competitive priorities required by customers, Decision Areas and the Strategy Stage attained by each

meatworks. Table 8.3 compares the Order Winning Criteria used at each meatworks-process with those used by Platts and Gregory (1992, p. 39-42). With the exception of

Platts and Gregory	Flock	Wilson	Bradley
• Delivery Reliability • Features • Quality • Flexibility of Design • Flexibility of Volume • Price/Cost • Delivery Speed	• Delivery Reliability • Features (processing options) • Quality (attainment of specification) • Flexibility of Design (specifications) • Response to variation in volume • Price • Relationship building	• Delivery Reliability • Features (processing options) • Quality (attainment of specification) • Flexibility of Design (specifications) • Response to variation in volume • Price (productivity) • Product Tracing	• Delivery Reliability • Features (processing options) • Quality (attainment of specification) • Flexibility of Design (specifications) • Response to variation in volume • Price/Cost • Packaging • Food Safety • Shelf Life

Table 8.3 Comparison of Order Winning Criteria used in each Process Application

delivery speed, all Platts and Gregory's criteria were used by the teams in all three meatworks. Criteria added by the meatworks teams were relationship building (Flock), product tracing (Wilson) plus packaging, food safety and shelf life (Bradley). Table 8.4 summarises the Decision Areas and Strategy Stage outcomes attained. The Decision Areas listed in Table 8.4 are those that occur most frequently (actions are planned at least five times across the four product family Action Plans). A comparison with the Decision Areas used by Platts and Gregory (1992, p. 46) is made in Table 6.4.

	Flock	Wilson	Bradley	
			Process 1	*Process 2*
Predominant Decision Areas	• Facilities (Works) • Producers/ Suppliers • Human Resources	• Processes & Technology • Control Policies • Distribution • Human Resources	• Facilities (Works) • Processes & Technology • New Product Introduct'n	• Processes & Technology • Human Resources • New Product Introduct'n • Facilities (Works) • Producers/ Suppliers
Strategy stage attained	2.5: Between Externally Neutral & Internally Supportive	1: Internally Neutral	3: Internally Supportive	

Table 8.4 Comparison of Decision Areas and Strategy Stage attained

8.1.3 Strategies developed

An indicator of the outcomes of the SOLP process is the kind of strategies that resulted from each application. For each company, this section compares the situation before the SOLP process with that achieved at the end of the process(es). This comparison and the evidence in Table 8.5 is then used to examine the similarities and differences between operations and logistics strategies at the three companies. Table 8.5 compares the main emphasis in each strategy at each process application, using evidence from the Action Plans developed for each product family.

The first meatworks researched, Flock, is a large abattoir (refer section 6.1) which had based its turnover on dressing cattle and sheep for many years. Recently it built a small table boning room to satisfy the needs of one supermarket customer. Before the SOLP process was carried out, no strategic plans of any kind existed. Flock had pursued major improvements, including ISO quality certification, inverted dressing of sheep, new water

treatment plant and a new steam generation facility. These improvements had not been linked to any particular customers or product families. Typically, management had a huge agenda of operational and sales decisions with hardly any time for strategic decisions. Strong central control was exerted by the Managing Director, who was one of the owners. He was prepared to hire managers from outside the industry.

Flock		**Wilson**	
Product Family	***Emphasis***	***Product Family***	***-Emphasis***
Beef Carcase	Supply chain alliances and capital expenditure to increase throughput volume	Beef Carcase	Facility improvements and employee training
Hides	Improve quality through supply and processing	Lamb Carcase	Major process changes and employee training
Small stock carcase	Quality improvement through training, and quantity through better supply chain relationships	Boxed Beef (Hospitality Industry)	Forward extension into sub-contracted portion control
Boxed beef	Increase output through major capital works	Boxed Beef Retail	Improvements to process and to employee skill levels
Bradley Process 1		**Bradley Process 2**	
Product Family	***Emphasis***	***Product Family***	***Emphasis***
Fresh Sausage-Retail	Increase production and range for launch into supermarkets	Industrial Products	Gain knowledge of supply chain. Create new products. Review with customers
Bacon	Improve yield and reduce processing costs through new technology	Bulk Frankfurts	Improve quality through process changes and training in teams
Packaged Frankfurts	New equipment and training to extend range and improve quality	Bulk Strasburg	Improve processes and people before launching new varieties
Hams	Improve facilities and process to increase range and quality	Dips	Decide between in-house and contract processing. Decide whether to add this new product family

Table 8.5 Main emphasis of strategies by product family in 16 Action Plans

As a result of the SOLP at Flock, the managers believed they were closer as a team. They felt involved and consulted on strategic matters. The major structural outcome was the commitment of $1.5 million to build new chilling and freezing facilities. The investment of capital in these new facilities represented a major increase in Flock's capacity to process carcasses by the further stage of boning into boxed meats.

The focus of strategic operations and logistics planning at Flock is now examined. The team showed a significant interest in the supply of livestock and a clear emphasis on the need for product quality. They had a limited focus on training employees and little emphasis on distribution and customer retention. There was no investigation of new products. The team's main focus was on new facilities to increase sales in one product group, Boxed Beef. It is believed that the decision to invest in new chilling and boning facilities would not have happened at that time without the Flock team undertaking the SOLP process.

The second meatworks researched, Wilson, is a small, marginally profitable abattoir operated by farmers who have vertically integrated into dressing to gain more control over the use of cattle and sheep from their farms (refer section 6.2). Before the SOLP process, Wilson's strategic planning was limited to a marketing and profitability document to satisfy the bank which had provided loans. Wilson's processes were below industry standards and its management was relatively untrained. The Directors knew what process improvements they required but lacked the capital to carry them out. Wilson's strength lay in its branded product and its strong relationships with farmers and retailers.

Wilson carried out the SOLP at a time of great stress due to lack of throughput and, hence, profit. Nevertheless, Wilson's managers felt involved in strategic aims and they considered that the Directors had shared information with them. Action Plans resulted from the planning at Wilson, but they tended to be 'wish lists' rather than focussed strategies. The plans relied too heavily on the Directors. No clear commitment to implement them was obtained during the SOLP process although many of the actions were taken subsequently. The partial success of SOLP at Wilson is considered to result

from the limited numbers and training of management at that company, rather than any weakness in the method itself.

The focus of SOLP at Wilson is now examined. The team had a major focus on employee training due to real concerns about some employees' ability to dress the animals into safe and disease-free carcases. The carcases are required to be completely free from faecal and other bacterial contamination so that no disease can be caused to people eating the meat at the end of the supply chain. The Wilson team placed limited emphasis on livestock supply. Many process improvements were identified but there were insufficient funds available to proceed with them. For the same reason, team members were frustrated with the product quality obtained, but unable to remedy the problems. The team's emphasis on distribution and customers was mainly focussed on portion control for Boxed Beef. The narrow emphasis in this policy area is considered to be due to a perception by team members that this area had already been mastered. There was no investigation of new products by the Wilson team.

The third meat processing plant researched, Bradley, is a large smallgoods manufacturer with a national reputation (refer section 7.4). It converts boned pig meats into a range of smallgoods. Prior planning at Bradley was limited to business planning without any strategic operations planning. In spite of its reputation for quality products and its ability to obtain significant price differentials over its competitors for most products, Bradley's profitability was quite low. The operations management team had not kept in touch with customers nor liaised properly with the Marketing and Sales Department. Commanded by newly-appointed Operations and General Managers, the management team was changing due to retrenchment, recruitment and re-organisation.

SOLP was introduced to Bradley at a time when it had several organisational problems. For example:

- its marketing and sales areas lacked direction and experience,
- it was undertaking major changes in operations managers to make its team more outward-looking towards other departments and customers, and
- it was placed on the market by its parent company.

Despite these problems, Bradley's managers started to consider strategies as a team, even though they had little help from marketing areas during the first process. The managers responded to the commitment of the Operations Manager by developing eight Action Plans over two process applications. During the first process, completed in May 1998, the team developed Action Plans for four product-family-channels (refer section 7.5.1). A high degree of implementation of these Action Plans was achieved in the next year. Three of the Plans were fully implemented (Fresh Sausage-Retail, Packaged Frankfurts and Bacon). One product family Plan (Hams) was not implemented because the Action Plan was unrealistic in terms of the equipment available. The Action Plan for Fresh Sausage-Retail was particularly notable, providing a new product line into supermarkets, with production building up to seven tonnes per week a year later. This represents an extra $1.4 million per annum in turnover.

In the second SOLP process (refer section 7.5.2), completed in December 1998, the Bradley team developed a further four Action Plans. After only ten months had elapsed, the strategies developed for two product-family-channels (Bulk Strasburg and Industrial Products) were fully implemented. The third Action Plan, for Frankfurts Bulk, was acceptable to management, but was not yet implemented. The Action Plan for one family (Dips) was shelved in April 1999 due to the timing being wrong for a move into such different products. The team at Bradley embedded the process into their regular tasks, providing their own chair of the team and carrying out SOLP a third time in October 1999. The facilitator is still present at all meetings to assist the chair and team members.

The main themes of Strategic Operations and Logistics Planning during the two processes at Bradley are now examined. During the first process, the team gave limited attention to meat supply, distribution and training employees. There was some emphasis on quality, particularly for Frankfurts. The team's main focus was on processing equipment, product range and updating processing and packing technology. During the second process at Bradley, the team placed considerable emphasis on the supply chain and training employees. There was some attention to quality. Major consideration was given to process improvements. The team also considered new varieties of existing products, such as Bulk Strasburg, and examined one completely new product family, Dips. Although the

plan to introduce Dips was not implemented, the fact that a previously introspective operations team was prepared to consider wider options was considered an important step forward. It is believed that none of the plans to improve the competitiveness of product families would have been developed at Bradley without the assistance of the SOLP process. The Operations Manager was very forward-looking and capable of making many of the decisions by himself. However, he faced an operations and logistics team which had seen five major process improvement initiatives fail, in spite of major resources invested, over the previous seven years. With his help, the SOLP process engendered a climate in which the operations team overcame the previous failures and generated practical plans for a number of product families. Bradley's management considers their applications of SOLP to be extremely successful.

The similarities between the outcomes at the three companies are now compared using the foregoing discussion and Table 8.5. The emphasis at Flock was on quality and capital expenditure, whereas the emphasis at Wilson was on process improvement and employee training. Flock management were satisfied with the outcome – a major decision to improve manufacturing facilities. Wilson management did not achieve a great deal from the SOLP, but they had not expected any overt outcomes. The emphasis at Bradley was on process improvement, product range and quality in the first process, changing to process improvement, employee training and the supply chain in the second process. Bradley's management were very pleased with the major outcomes in terms of product penetration and process improvement. They continued to support the process, which is now (October, 1999) being used for the third time.

8.1.4 Support for the process

An important aim of the SOLP process was to provide greater support for team members to formulate strategies. This section details four improvements in support: external facilitation, group consensus, tailoring the process, and development of Action Plans.

External facilitation was provided for all processes following the example of Platts and Gregory (1990, p.23), and extending their example to a series of workshops over a period

of time. The researcher, and in some cases a colleague, was present at all meetings to assist team members in following the SOLP process. The planning team benefits by:

- being taught the process, step by step,
- being able to concentrate on direction and content, rather than process,
- having more autonomy to examine novel solutions because the facilitator has no internal power,
- having their concerns met by answers and examples, and
- being given motivation and stronger direction in the first few meetings until their own motivation and knowledge are built up.

It is not possible to compare the present research with SOLP processes without external facilitation, since such processes do not exist. However, the esteem with which the facilitator was held was particularly evident at Bradley. Members accorded the facilitator an honoured place and respected his views. The essential nature of such facilitation was also observed at Flock and Wilson, neither of which would have considered carrying out operations planning without assistance. Hence external facilitation is considered to be an essential and successful part of the SOLP process. As firms repeat the SOLP process, they are believed to have progressively less need for an external facilitator, as the process becomes a normal part of their way of working. This inference is supported by observations at Bradley, where the team is currently undertaking its third application of SOLP.

Providing a climate in which *group consensus* was likely to be attained by team members was a major aim of the SOLP process. Platts et al. (1998, p. 152) recommends '*individual and group participation* (in strategic operations planning) *to achieve enthusiasm, understanding and commitment*'. Members whose views have been heard by the team are believed to be more likely to be committed to implement the team's Action Plans. The presence of an external facilitator without responsibilities in the company's management structure provides the opportunity for normal command structure to be set aside during the SOLP meetings. Consensus was certainly obtained at Flock, and at Bradley in the second process. This is indicated by observation and by the results of the interviews conducted at the end of the SOLP process. There was insufficient sharing of ideas at

Wilson to engender consensus. Instead the sub-groups were dominated by the respective Directors. It is believed that a reasonable, though not complete, degree of consensus was reached during the first process at Bradley.

Considerable efforts were made to *tailor* each process to the particular company. This involved choice of the planning team, amending competitive criteria and policy variables and the agenda used during each meeting. Tailoring of manufacturing strategy process to different sizes of companies is also being carried out by Bourne et al. (1996, p.6). This tailoring in the meatworks appeared to be sufficient for the teams at Flock and Bradley. Team members at Wilson requested a much simpler process with fewer steps. It is likely that a much simpler method, cutting out many of the worksheets and processes, would have been required for all members to understand the whole process at Wilson and hence contribute to its results. This request was not complied with since it was believed to remove the essence of the SOLP process. Tailoring is intended to fit the process to the individual team without losing its essential steps.

The development of time-phased *Action Plans* as the last worksheet in the formulation process provides a major form of support to SOLP team members. Previous work (Platts and Gregory, 1990, p.21-23) generated the actions required to implement an operations strategy but did not convert these actions into a time-phased Action Plan. The Manufacturing Audit Approach culminates in an Action Worksheet which does not segregate nor sequence in time the actions required to implement the strategy. The content of Action Plans resulting from the SOLP process has been described above in section 8.1.2. This section evaluates Action Plans in the context of process support.

Table 8.6 gives an example of a SOLP Action Plan. Policy areas in which actions may be required are listed in the rows down the table. A time scale of three years is provided across the width of the table. When the actions required are placed in sequence in the body of this table, managers find the result very convincing. All the necessary information is available for a manager to implement his/her parts of the Plan. The provision of all the necessary decisions for a particular product family supports good communication both within the team and, more widely, through the organisation. Once

team members see a completed Action Plan, this increases their motivation to review and complete the SOLP process to provide similar Plans for other important product families. Action Plans have proved to be important in the successful implementation of operations and logistics strategies at Flock and Bradley. The partial success of SOLP at Wilson is considered to result from the limited training of management at that company and the lack of resources available, rather than any weakness in the support provided for the process.

As a summary of the total support which the SOLP process provides to the team, the following notes made by the facilitator are quoted verbatim. The notes, which were made after the end of the second process, provide further insight into the status of SOLP at Bradley and into the effect of the process generally.

> *The Game Plan* (internal name for SOLP) *is now accepted by all team members as a worthwhile process. It is engendering Action Plans, which are generally followed and successful, and unheard of cooperation between Sales and Operations. The facilitator is accorded an honoured status. The Organisation Development Manager organises agendas and presentations but he regards the facilitator's presence as essential to legitimise the process. The Game Plan has been embedded into regular procedures at Bradley. The General Manager was pleasantly surprised at the ideas and actions that have come out of the team.*

The foregoing results were obtained by the facilitator observing the process. The next sub-section provides a summary of responses by two senior managers when interviewed some time after the process and, then, section 8.2 examines the extra information obtained from interviews with team members after each process was completed and the extent of support that such information provides for the research propositions.

Table 8.6 WORKSHEET 8

Initials: ___PHG & group

ACTION PLAN - BRADLEY

Product Family: Fresh Sausage- Retail

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 Fix Bratwurst	New chains	Decide capital options	Buy new equipment		
Capacity		Underutilisa-tion to be explained					
Vertical Integration							
Processes & Technology			Resolve store branding issue				
H Resources							
Quality							
Control Policies			Convert sausage to new schedule	Explore national distribution			
Suppliers							
Distribution							
NewProduct introduction			Explore possibilities of Gourmet range & 'Healthy sausage" plus Halal & Kosher		Product introduction		

8.1.5 Comparison of Outcomes of Post-SOLP Implementation Interviews

It is useful to compare the responses to post-SOLP implementation interviews by two managers at each company where the process was applied. Table 8.7 makes this comparison for all the questions where a useful, brief comparison can be made. The answers are abbreviated to enable their general tenor to be compared. The responses were very positive and, frequently, the same response was obtained from each manager. The collective findings from these responses are discussed in section 8.3.

Question (Question numbers refer to Appendix 5)	Flock		Wilson		Bradley	
	MD*	FC	SMD	OD	OM	ODM
2. Outcomes						
a. $ spent	$M 1.5	-	-	-	$M0.4	NR
b. Processes changed	Yes	-	Yes	-	Yes	Yes
c. Team Relations	DNK	Yes	-	-	Yes	Poss
d. Member Actions	-	Yes	Yes	Yes	-	Poss
3. Plans without Game Plan (GP)?	Yes	Yes	Yes	Yes	Yes	No
4. Better decisions through GP?	No	Yes	Yes	-	Poss	Yes
5. Improved management performance	Yes	No	Yes	Partly	Yes	Yes
a. Targets gained through GP?	Yes	No	Yes	-	Yes	Yes
6. Is Facilitator important?	V.Yes	V.Yes	V.Yes	Yes	V.Yes	V.Yes
7. Anything missing?	-	Yes	Yes	Yes	No	Poss
8. Managers pull together through GP?	Yes	Yes	Yes	Yes	Yes	Yes
9. Were O.&L.* strategies combined?	Yes	Yes	-	Yes	Yes	No
a. Important plan O.&L. together?	Yes	V.Yes	-	Yes	Yes	Yes
10. Strategic initiatives since?	Yes	Yes	-	Yes	Yes	No
a. Initiatives due to GP?	Partly	No	No	-	Yes	-
11. Did GP improve O&L perform.?	DNK	Yes	Yes	Yes	Yes	Yes
12. Team get longer view?	Yes	Yes	Partly	Yes	Partly	Partly
a. View help with strategic direction?	Partly	Yes	-	-	Yes	-
13. Were strategies communicated?	Yes	Yes	Partly	-	Yes	Yes
a. Did this affect performance?	Partly	Yes	Poss	-	Yes	Yes
14. Is meat industry significantly diff.?	No	Part	-	-	No	Yes

Legend

- No response	DNK Do Not Know
Poss possible (midway between Yes and No)	V. Yes Very important
O&L Operations and Logistics	GP Game Plan

Table 8.7 Comparison between question responses at each meatworks

8.2 Extent of support for Propositions from Interviews and Process Observations

This section examines information to determine whether each of the Propositions (section 5.4) is confirmed or denied. Most of the data is obtained from individual interviews with team members undertaken at the start and end of each SOLP process application. Information is also gained from observations of the process, described in Chapters 6 and 7. The analysis of all this data is used to judge the extent of support for the research hypotheses, in section 8.3. A summary of the extent of support for each proposition is supplied in section 8.2.13. The heading of each sub-section gives the general intent of each proposition. The proposition is then stated in full in the text together with the question/s used to obtain information about the proposition.

The analysis uses the interview responses described in section 6.3, for Flock and Wilson; and in section 7.6.2, for both the processes at Bradley. For most propositions a table is constructed to compare responses between the four SOLP processes. Where the questions have a 'Yes / No' answer, for example *'Do you feel closer to other members of the management team?'*, the tables show the proportion of team members who answered 'Yes' to that question for each process. Where the questions require descriptive answers, such as *'What areas of the* (SOLP*) work were most helpful to you?'*, the tables show the frequency of team members who made each of the listed responses. The number of respondents is shown at the top of each column. In theory it is possible to use a statistical hypothesis test to examine whether there is any significant difference between the responses of members in different SOLP processes. This approach was rejected in favour of qualitative comparisons, because of the small number of respondents and the concern that responses do not meet the conditions of independence required for a statistical test to be valid.

8.2.1 Proposition 1. SOLP contributes to improved strategic decisions

Table 8.8 summarises the answers to three questions posed for each individual during the interviews which provide evidence about the proposition that 'Effective SOLP contributes to improved strategic decisions and actions, at business or operating levels'. The questions were (refer Appendix 3 for full set of questions):

6. What have you achieved by means of the strategic planning process?

For example:

Has strategic management improved?

Have you taken any actions as a result?

Achievements as a result of the SOLP process				
Number of team members who believed that SOLP had enabled them to achieve the following:	Flock n=7	Wilson n=8	Bradley Process 1 n=12	Bradley Process 2 n=12
• Team approach	6	-	4	3
• Strategic direction	-	4	4	4
• Specific improvements	-	1	2	4
Proportion of members who agreed that they had achieved these results:				
Improved strategic management	0%	57%	63%	67%
Action was taken as a result of SOLP	29%	71%	33%	58%

Table 8.8 Data used for Proposition 1

(n = number of managers interviewed at each company)

The first three rows of Table 8.8 indicate that a large majority of team members pointed to achievements as a direct result of the process without being prompted as to the type of achievement. The row labelled 'Improved strategic management' in Table 8.8 demonstrates that this improvement was perceived by a majority of members in three out of four applications. The last row indicates that action had been taken personally already by one-third to two-thirds of the members. The lower proportions occurred at Flock and Bradley, Process 1. It is interesting to observe that the proportion who took action at Bradley as a result of the first process was nearly doubled as a result of the second process.

Involvement in the process at Flock, Wilson and Bradley also provides information relevant to Proposition 1. Drawing on observations at Flock described in section 6.1, the Managing Director was seen to have little time for strategic planning, because of his involvement in running the plant. However, at the final team meeting, a major strategic decision was taken by all team members, to build extra chilling and freezing facilities. Then, five months after the process finished, the Managing Director stated that SOLP had been responsible for the decision to build extra facilities at Flock, and

the plans had been submitted to the City Council. When interviewed over two years later, Flock's Managing Director and Finance Controller were less certain that the facilities decision was caused by the SOLP process (Table 8.7). This may be due to a change in perception over the elapsed period of time. Next consider the observations of Wilson meatworks described in section 6.2. Operating the business is a full-time occupation for the Directors, leaving no time for strategic planning of operations and logistics. However, at the last SOLP meeting, the Sales and Marketing Director said that he was comfortable with the plans that resulted; he did not expect an overall operations picture to be prepared. The observations at Bradley meatworks (refer section 7.5) included a statement by the Operations Manager, at the start of the first process, *"Five continuous improvement programmes over eight years have not achieved any significant improvement in key performance indicators."* Later, during the second process, the General Manager stated that he attributed the success of the Fresh Sausage-Retail project to the SOLP process creating collective ownership of the project. In each of these cases, the observations support the Proposition that the SOLP process contributes to improved strategic decisions and actions.

Taking all these answers together gives strong support for the proposition and suggests that repeated processes further increase the contribution which SOLP makes.

8.2.2 Proposition 2. Indicators of improved management

Results from the SOLP processes and one question enable the veracity of Proposition 2, 'Improved management performance is indicated by managers' own views and by attainment of operational targets leading to improved business performance' to be examined. The question used for this proposition was:

6b. Has strategic management improved?

The results of this interview question at each process are compared in Table 8.8. A majority of team members considered that strategic management had improved at the conclusion of three out of the four SOLP processes. It is notable that the team at Flock were the ones who did not perceive any improvement even when they had taken a major decision to expand production facilities.

At Flock, the SOLP process resulted in major capital expenditure to enable increased production of one product family. At Wilson, no concrete results were observed. At Bradley, changes were made to manufacturing processes in support of Fresh Sausage-Retail, Bacon and Packaged Frankfurts as a result of the first SOLP process. The changes involved increased production range, improved manufacturing yields and new equipment, respectively. From the second SOLP process, changes were made to the packaging of Bulk Strasburg and to the methods of relating to customers for Industrial Products. The changes for Industrial Products required direct contact between a number of Bradley functions and their counterparts in the customer organisation.

Hence both managers' views and operational results achieved provide strong support for this proposition.

8.2.3 Proposition 3. SOLP leads to observable results

Proposition 3, 'Implementing SOLP leads to observable results' is supported by the results from the process listed in the above paragraph. There were clearly-observed results from the SOLP process at Flock and at Bradley. Each of the six managers interviewed some time after the process (Table 8.7) indicated an outcome from it. Two managers referred to capital expenditure, four stated processes had changed and three managers indicated that team members had taken specific actions. Hence both process observations and managers' views provide strong support for this proposition.

8.2.4 Proposition 4. Plan formulation requires an external facilitator

Observations of the planning process and interview questions enable Proposition 4 , 'Formulation of a strategic plan requires an external facilitator', to be examined. The questions used were:

Please think about the Game Plan (i.e. SOLP process) *meetings that were held.*

15. What areas of the work done helped you most?

16. What could be improved if future Game Plans were developed?

17. What should the facilitator have done to improve meetings?

Table 8.9 summarises the results of these questions. The first row shows that the majority of members found no fault, in any area, with the facilitation at three out of the four processes. This would appear to be a very strong statement in favour of external facilitation. Seldom are business managers unable to find fault with a process, which has caused them to spend an extra 18 hours in meetings. The specific suggestions are listed in Table 8.9 to demonstrate that they are, generally, the individual views of members and often they are contradictory Inevitably compromises are made. The facilitator, in considering what is good for the team, will frequently not achieve the preferences of individual members.

Comments have been made above (section 8.1.4) about the essential nature of external facilitation from observations during the planning processes. Specifically, at Flock, the role of the facilitator was to be an expert in the planning process (section 6.1, meeting one). Later he provided motivation and enthusiasm for the team to get fully involved. At Wilson, similar situations occurred, with continual need to teach the planning steps and provide both specific examples and encouragement as the team completed each process step (refer section 6.2). In the first process at Bradley, the facilitator explained the SOLP procedure as required during meetings (Table 7.3). He was active in persuading the Marketing and Sales Manager to support the process and he selected the members of sub-groups which examined individual product-family-channels. During the second Bradley process, the facilitator's role was reduced by the Organisation Development Manager chairing meetings and circulating agendas but he was still consulted on any matter of planning process (refer section 7.5.2). From all this process evidence it is concluded that an external facilitator is essential, particularly during the first process at a particular company.

Hence the evidence from all four processes and the interview questions is considered to provide strong support for the proposition.

	Flock	Wilson	Bradley	
			Process 1	Process 2
	n=7	n=8	n=12	n=12
Proportion of responses which found no fault with facilitation:	57%	50%	33%	100%
Number of team members who made the following suggestions to improve facilitation:				
Provide more motivation/ energy	1			
Keep group together as a whole	1			
Provide more flexible worksheets		1		
Facilitator should have more understanding of industry		1		
Remove obstacles to progress (such as mobile phones)	1		2	
Reinforce SOLP process			1	
Do one product family at once			1	
Set tighter deadlines			1	1
Provide more time		2		
Provide less time (short, frequent meetings)			1	1
Go slower and use hard data			1	2

Table 8.9 Data used for Proposition 4.

(n = number of managers interviewed at each company)

8.2.5 Proposition 5. The method contains all the components required

The questions used to examine the extent of support for Proposition 5, 'The method of strategy formulation contains all the components required to generate effective operations and logistics strategies' were:

16. What could be improved if future Game Plans were developed?

21. Would you like to make any other comments about strategic Game Planning for Bradley (for example)*?*

Table 8.10 brings together all the comments made by team members in each process in response to question 21, separating positive comments, which support the process or suggest subsequent work, from negative comments, which criticise part of the process. No member has suggested that any extra investigation is required. One addition suggested, at Flock and Wilson, was to proceed to a full business plan. This is a reasonable outcome, but does not require any additions to the SOLP process.

Three members at Bradley stated that the process should be more visible in the company. However, formal release of the plan to shop-floor employees was suggested by the facilitator but not carried out due the lack of precedent or culture for such action. The lack of sales involvement, quoted by three members at Bradley, was an

Comments made by team members				
	Flock	Wilson	Bradley	
Number of particular responses	n=7	n=8	Process 1 n=12	Process 2 n=12
Positive responses				
Planning should become part of normal work	1			
Go on to develop a full plan	2	1		
Review decisions in twelve months	1			
Wilson will increase its market share		1		
Worthwhile process			2	3
Negative responses				
Ownership of plans needs to come from managers	1			
Planning should include all levels of management/ employees		2		1
Some procedures are not relevant for our plant		1		
Lack of sales involvement			3	
Process should be more visible in the company				3

Table 8.10 Data used for Proposition 5.

(n = number of managers interviewed at each company)

inability of Bradley to provide the right membership due to the particular management situation at that time. It is not a criticism of the process which the researcher intended to achieve. Hence Bradley team members did not recognise any omissions from the process.

Further comment on the validity of Proposition 5 is obtained from team members' responses when asked by question 16 to consider whether any areas could be improved. Table 8.11 combines the number of areas of possible improvement given in Table 6.16, for Flock and Wilson; and, in Table 7.17, for Bradley. Table 8.11 omits responses by a single member unless the responses suggest an addition to the process

because they are not helpful in consideration of this proposition. None of the areas requiring improvement suggest any addition to the SOLP process. Several of the areas suggest need for greater tailoring of the process to the individual firm or supply chain. Two of the areas imply that the method was beyond the capability of some team members at Wilson. It is considered that addressing these concerns would affect the feasibility of the whole process. The comment 'Implementation problems' by two members at Bradley deals with matters subsequent to the SOLP process. The comment 'Include more supply chain people' is a matter of team organisation which

Areas of process requiring improvement				
	Flock	Wilson	Bradley	
	n=7	n=8	Process 1 n=12	Process 2 n=12
Questions not defined in meat industry terms	3			
Team not focussed enough on task	2			
Sessions too long or too much preamble	2		2	2
Complex, too many worksheets, too structured		4		
Use of product groups or order winners is impractical		2	1	
Team had too little time		1	1	
Lack of sales involvement/ market understanding			2	2
Implementation problems				2
Include more supply chain people				1

Table 8.11 Further data used for Proposition 5.

(n = number of managers interviewed at each company)

is considered a fair comment. It would move the processes at Bradley towards the theoretically-preferred team composition which comprises representatives of all links in the chain from farmers to retailers (refer section 7.2). Hence the absence of any recommended additions in this table gives some support to the proposition that there is nothing missing from the SOLP process.

The material provided by these two questions provides strong support for Proposition 5. In processes that work successfully, there is no evidence that any required component has been omitted from the strategy formulation process.

8.2.6 Proposition 6. Use of strategic concepts requires managers to pull together.

Observation of the process and interview questions are used to consider the validity of Proposition 6, 'Ability to use strategic concepts in their day-to-day decision-making requires managers to be informed and to be motivated to pull in the same direction.' The questions used for this proposition were:

6. What have you achieved by means of the strategic planning process?

For example:

6b. Do you feel closer to other members of the management team?

The proportion of members who felt closer to other members of the management team after each process is given in the first row of Table 8.12. The relatively low result for Flock may be caused by the very high degree of interaction between the small management team, which already existed before the process was undertaken. In fact six out of seven members at Flock said that they had achieved "Planning together as a team" (refer section 6.3). In the other three processes, over 70% of the team members felt closer to their colleagues as a result of the processes. This strongly supports the building of a team spirit and hence increased likelihood that all members would pull together on strategic issues.

Responses	Flock	Wilson	Bradley	
			Process 1	Process 2
	n=7	n=8	n=12	n=12
Proportion of team members who feel closer to other members	43%	71%	73%	75%
Number of managers who believe team members pull in the same direction	6	1	3	3

Table 8.12 Data used for Proposition 6.

(n = number of managers interviewed at each company)

The number of answers to the general question '*What have you achieved by means of the strategic planning process?*' which cite members pulling in the same direction is given in Table 8.8. The responses support this concept since this answer is only one of many unprompted answers which members could give.

There is some direct evidence that team members have applied the concepts learned in SOLP to their own areas to obtain more resources. One member at Wilson obtained a personal computer in this way. At Bradley, two members have made specific improvements in their area of responsibility after the first process, rising to four members after the second process. It is possible that this merely represents managers using the opportunity to further their own agenda, but it is more likely to represent the application of strategic management in the manager's own area.

Several team members at Wilson referred to the welcome flow of extra information they had obtained as a result of the SOLP process (refer Table 6.16). This was also true at Bradley (refer Table 7.16), where most of the operations managers became much less insular as a result of the process. This was the view of the Operations Manager and the Organisational Development Manager, confirmed by the observations of the facilitator.

Combining these interview responses and process observations provides moderate support for Proposition 6.

8.2.7 Proposition 7. Possession of SOLP is one indicator of successful plan formulation

Process observations are used to examine Proposition 7, 'Possession of a formal SOLP is one indicator of successful formulation of operations/ logistics strategy'. The context of this Proposition is provided by a statement by the Managing Director of Flock: *"I am very keen to have a set of (operations) plans: their lack is a major weakness"* (refer section 6.1.1). A formal Strategic Operations and Logistics Plan is one that has been documented and settled by the planning team. Prime parts of the formal plan are Order Winning Criteria (Worksheet 3) and Action Plans (Worksheet 8) for the particular product family. Earlier in this chapter the successful achievement of OWC (section 8.1.2), other process steps and Action Plans for each of the four product families at all four process applications (section 8.1.3) are described. Hence each application has a formal SOLP for several families.

The motivation to implement and great support provided by Action Plans are depicted in section 8.1.4. Therefore the existence of these formal SOLPs, as denoted by the resulting Action Plans, provides a necessary indication of successful formulation. This

existence is not argued to be sufficient by itself to prove successful formulation. It is still possible that the actions listed in the Action Plans will not produce the strategic results which the competitive situation requires. However, the case is made that one essential indicator is present. Hence Proposition 7 is strongly supported.

8.2.8 Proposition 8. SOLP produces a complete functional strategy

Process observations at all companies and interview questions at Bradley are used to consider the soundness of Proposition 8 which asserts 'SOLP produces a complete functional strategy which combines operations and logistics'. The questions used to investigate this proposition were:

11. Will you make any new contacts with supply channel partners (such as meat suppliers or smallgoods distributors)? YES / NO

Organisation	*Position*

12. How do you expect interaction with outside contacts to improve your performance?

13. Are other members of Bradley's Supply Channel (i.e. suppliers and customers) important to your job? YES / NO

If YES, Why?

The Question 11 posed to team members at Bradley after both processes, gives information relevant to Proposition 8. The fact that almost all members said they intended to make new contacts after the first process and almost half after the second process (refer section 7.6.2) gives some support to this proposition. Positive responses were also obtained to Question 13 from almost all members after each process. The majority of reasons given for the importance of the supply chain, after both processes, were integration of the chain and assistance to the member's own area. Only one third of Bradley members were thinking primarily about supply chain integration. These two sets of responses indicate that members are thinking afresh about the supply chain contacts they require.

An examination of the sixteen Action Plans produced by the four SOLP processes (refer Table 8.5) shows that all, except one, contain actions under the logistics headings of vertical integration, suppliers and distribution. The exception was Bacon, within Bradley Process 1, probably because the bacon meat is perceived as an essential by-product from the rest of the pig meats. This existence of logistics actions in all except one of the Action Plans supports this proposition.

Putting these two pieces of evidence together provides moderate, but not conclusive, support that a complete functional strategy has been formulated.

8.2.9 Proposition 9. Preparation of a strategic plan leads towards strategic management

The validity of Proposition 9, 'Preparation of a strategic plan is not an end in itself: it is a step on the road to strategic operations management' is investigated by an interview question and a process observation. The question used for this proposition was:

20. Are you interested in developing your strategic planning skills? YES / NO

If YES, What would help you to improve your own ability to manage your area more strategically?

Table 8.13 compares the answers to this question across the four applications. A large majority supports such continuing education in all processes. This supports the proposition: members did not find the SOLP process the end of strategic planning; they want to continue. Answers to what they wanted to continue with were quite varied. Table 8.13 collates answers where members wanted assistance with strategic thinking or with the application of strategic management to the people who reported to them. A number of respondents were placed in this category, especially at Flock meatworks. In addition, the team from the more developed management structure at Bradley embedded SOLP into their regular management processes (refer notes made by facilitator, section 8.1.4).

Personal development in strategic management				
Number of team members who gave the answer cited	Flock n=7	Wilson n=8	Bradley Process 1* n=12	Bradley Process 2 n=12
'Would you be interested in personal development in strategic management?'				
- Yes	6	4	9	10
- No	1	2	1	1
Area to be addressed				
Detailed strategy development / strategic thinking	3	0	1	1
Plan for own group	2	1	2	0

Table 8.13 Data used for Proposition 9
(n = number of managers interviewed at each company)

An informative statement was made by the Managing Director at Flock: *"The process creates an awareness of issues and problems; and educates team members"* (refer section 6.1.2). Taken together, these sources of information provide strong support for the proposition.

8.2.10 Proposition 10. SOLP leads to improved operations performance

The interview questions used to investigate Proposition 10, 'SOLP leads to an advantage over competitors through improved operations performance' were:

18. Has the Game Planning improved your performance? YES / NO / UNSURE
How do you know this?

Members' responses to the questions above were mixed at Flock but they were very positive at Wilson and Bradley (Table 8.14). The responses and the successful implementation of many Action Plans (refer section 7.6.1.4 for Bradley) provide circumstantial evidence that operations performance has improved, but no objective evidence links such performance to competitive advantage. Hence this proposition must be regarded as only weakly supported.

Proportion of team members whose personal performance had improved				
Response	Flock	Wilson	Bradley	
			Process 1	Process 2
	n=7	n=8	n=12	n=12
Yes	29%	57%	59%	64%
Unsure	42%	43%	33%	27%
No	29%	-	8%	9%

Table 8.14 Data used for Proposition 10.

(n = number of managers interviewed at each company)

8.2.11 Proposition 11. Managers need a long-term orientation

Evidence to validate Proposition 11, 'Managers need to have a long-run orientation to take strategic initiatives', is obtained from interview questions already analysed. Team members' responses which state (Table 8.15) that they have achieved a wider forward view as a result of the SOLP process in three out of four processes supply the data for the first row in Table 8.15. In addition, strategic initiatives were undertaken as a result of the process at the same three process applications (Table 8.15, second row). The juxtaposition of these two pieces of evidence demonstrates a possible connection between interest in strategic management and ability to take strategic initiatives. The meat processing industry managers who have taken part in this research are considered to display a short-term focus. For example, when the Flock managers held a discussion with a customer in meeting 4, they tended to examine short-term rather than long-term problems (refer section 6.1.1). This observation suggests that some movement towards a long-term view occurred in tandem with a broader view across departments, but this movement was much less than a full strategic outlook requires. Whilst not conclusive with a small sample, this connection and the observation of team members provides evidence in moderate support of the proposition.

The view could be taken that managers displaying a short-term focus are not fit to carry out the SOLP process. It is argued that this is an excessively theoretical view. This research is being carried out with teams of managers representing a major industry. It is not helpful to take the view that they are not capable to carry out operations planning. Rather it is suggested that SOLP provides growth in the ability to take a long-term

orientation from the context of the workshops undertaken and from spread of knowledge amongst team members. There is evidence at Bradley (refer Table 7.21, line 12) that managers increased their level of understanding of the process of strategic management after two applications of the process.

Link between strategic orientation and strategic initiatives				
	Flock	Wilson	Bradley	
			Process 1	Process 2
	n=7	n=8	n=12	n=12
Majority interest in strategic management	Yes	No	Yes	Yes
Strategic initiatives taken as a result of SOLP process	Yes	No	Yes	Yes

Table 8.15 Data used for Proposition 11

(n = number of managers interviewed at each company)

8.2.12 Proposition 12. Operations/ logistics strategy must be communicated throughout management

The interview question used to investigate Proposition 12, 'Operations/ logistics strategy must be communicated throughout management (often expressed as throughout the organisation) in order to make a difference in performance' was:

6b. Do you feel closer to other members of the management team?

Since the evidence on improved performance is equivocal, as discussed in section 8.2.10 above, it is unlikely that this proposition can be entirely validated. However, there is strong support for the SOLP process improving communication between managers, refer Table 8.12. Four out of seven team members considered team development to be an important contribution of the process at Wilson (refer section 6.3). Also at Wilson the Quality Assurance Officer (1) stated "*Good to get the key personnel involved because previously we had been told too little*" (Refer section 6.3). At the same time the planning team have taken strategic initiatives in three out of four applications (refer Table 8.15). Therefore, there seems to be evidence for a link between the communication of strategies throughout the management group and taking strategic decisions *which may* lead to improved operations performance. Together, these indications are considered to give moderate support for Proposition 12.

8.2.13 Summary of Extent of Support

Table 8.16 summarises the degree of support for each proposition found in the above discussion. The second and third columns indicate the strength of support derived from process observations and manager interviews, respectively. Based on this discussion, the next section assembles the information from both observing the SOLP process and the interviews to judge whether the research hypotheses are confirmed or denied.

8.3 Findings

In this section, the analysis carried out earlier in the chapter, and in Chapters 6 and 7, is used to confirm, or negate, the research hypotheses. The degree of support for each research hypothesis is obtained from observations of the SOLP process, from propositions supported by evidence from interviews with team members and from the literature.

8.3.1 The SOLP process can be applied effectively

Figure 8.1 demonstrates which propositions and other observations provide evidence about the hypothesis 'The SOLP process can be applied effectively to the meat processing industry, which has some significant differences from other manufacturing industries.'

Consider the process observations summarised in Table 8.1. Success was achieved in all formulation stages in the three applications at Flock and Bradley. At Wilson, all the formulation stages were completed and four Action Plans were derived, but there are some qualifications about the quality of those plans and the strategic vision of operations achieved. The SOLP process was essentially completed in each of the four meat industry applications. These observations are considered to give strong support to this hypothesis.

Proposition	Degree of Support	
	P.O.*	Int.+
1. 'Effective SOLP contributes to improved strategic decisions and actions, at business or operating levels'	Strong	Strong
2. 'Improved management performance is indicated by managers' own views and by attainment of operational targets leading to improved business performance'	Strong	Strong in 3 out of 4 processes
3. 'Implementing SOLP leads to observable results'	Strong	Strong
4. 'Formulation of a strategic plan requires an external facilitator'	Strong	Strong
5. 'The method of strategy formulation contains all the components required to generate effective operations and logistics strategies'	n.a.#	Moderate
6. 'Ability to use strategic concepts in their day-to-day decision-making requires managers to be informed and to be motivated to pull in the same direction.'	Moderate	Moderate
7. 'Possession of a formal SOLP is one indicator of successful formulation of operations/ logistics strategy'	Strong	n.a.#
8. 'SOLP produces a complete functional strategy which combines operations and logistics'	Moderate	Moderate
9. 'Preparation of a strategic plan is not an end in itself: it is a step on the road to strategic operations management'	Strong	Strong
10. 'SOLP leads to an advantage over competitors through improved operations performance'	Weak	Weak
11. 'Managers need to have a long-term orientation to take strategic initiatives'	Moderate	Moderate
12. 'Operations/ logistics strategy must be communicated throughout management (often expressed as throughout the organisation) in order to make a difference in performance'	n.a.#	Moderate

Table 8.16 Extent of Support for Propositions

Legend: * P.O. means Process Observation. + Int. means Interviews

n.a. means 'not applicable'

The extent of difference of the meat processing industry from other industries has been investigated in section 5.2. It is clear that the combined effect of product perishability, manual processing of animals, strong development of workforce and less development of management creates an environment which is markedly different to most other industries in Australia.

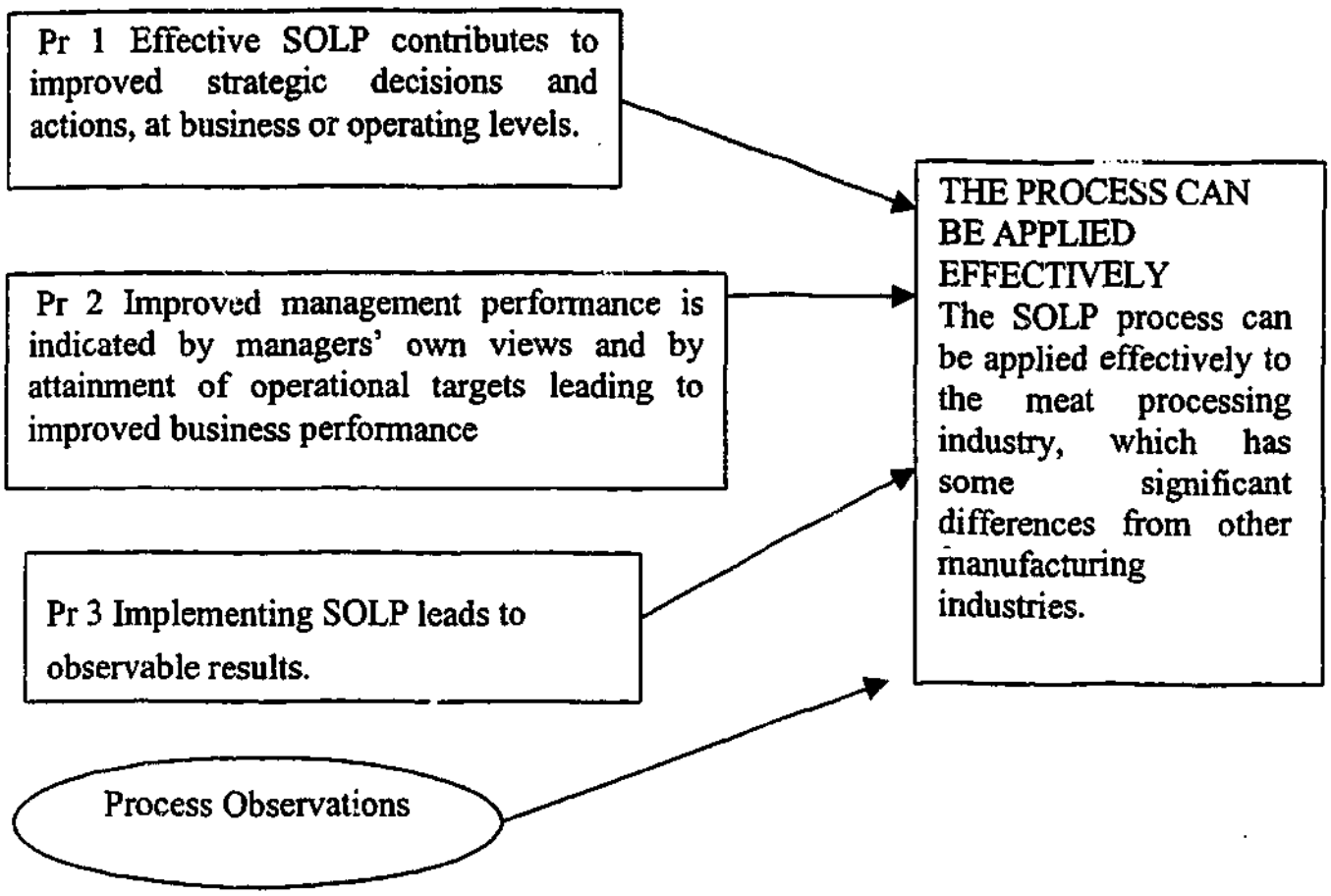


Figure 8.1 Links between propositions and the first research hypothesis

The first proposition 'Effective SOLP contributes to improved strategic decisions and actions, at business or operating levels' is strongly supported by the views of members of the planning teams (refer section 8.2.1). The second proposition 'Improved management performance is indicated by managers' own views and by attainment of operational milestones on the way to improved business performance' is strongly supported by the operational results achieved and the views of team members. The third proposition 'Implementing SOLP leads to observable results' is strongly supported by the Action Plans for a number of product families which came

out of each SOLP process and by the observed implementation in three out of the four processes.

Combining all these observations and interview results, there is strong support for the hypothesis. It is considered proven that 'The SOLP process can be applied effectively to the meat processing industry, which has some significant differences from other manufacturing industries.' Further comment on this conclusion, in the context of the whole research project, is made in section 9.2.2.

8.3.2 The SOLP process is made operational

The links between the evidence and the hypothesis 'The SOLP process has been operationalised for manufacturing companies, because barriers to success have been removed' are illustrated in Figure 8.2.

Process observations, refer section 8.1, demonstrate the utility of several process supports building upon a good process (Platts and Gregory, 1990, p.6-26). The attainment of group consensus at all four process applications, to a greater or lesser extent, removes an important barrier to successful plan formulation. Continuous tailoring of the process, during meetings, to the needs of individual teams removes a potential barrier to success, provided management development is sufficient to visualise forward objectives and the steps required to achieve them for a particular set of customer needs. This tailoring is expensive, in terms of resources required, and forms part of the essential requirement for an external facilitator. External facilitation appears to be almost essential for the first time SOLP is conducted with a planning team. It provides teaching, motivation and leadership, without removing autonomy. Therefore external facilitation is a support which creates the climate for successful operations planning.

The derivation of time-phased Action Plans is a further important condition for fruitful implementation. Action Plans were not included in the Manufacturing Audit Approach (Platts and Gregory, 1990, p.6-26). The place of Action Plans in SOLP has been discussed in section 8.1.3. It is clear that managers feel empowered to carry out

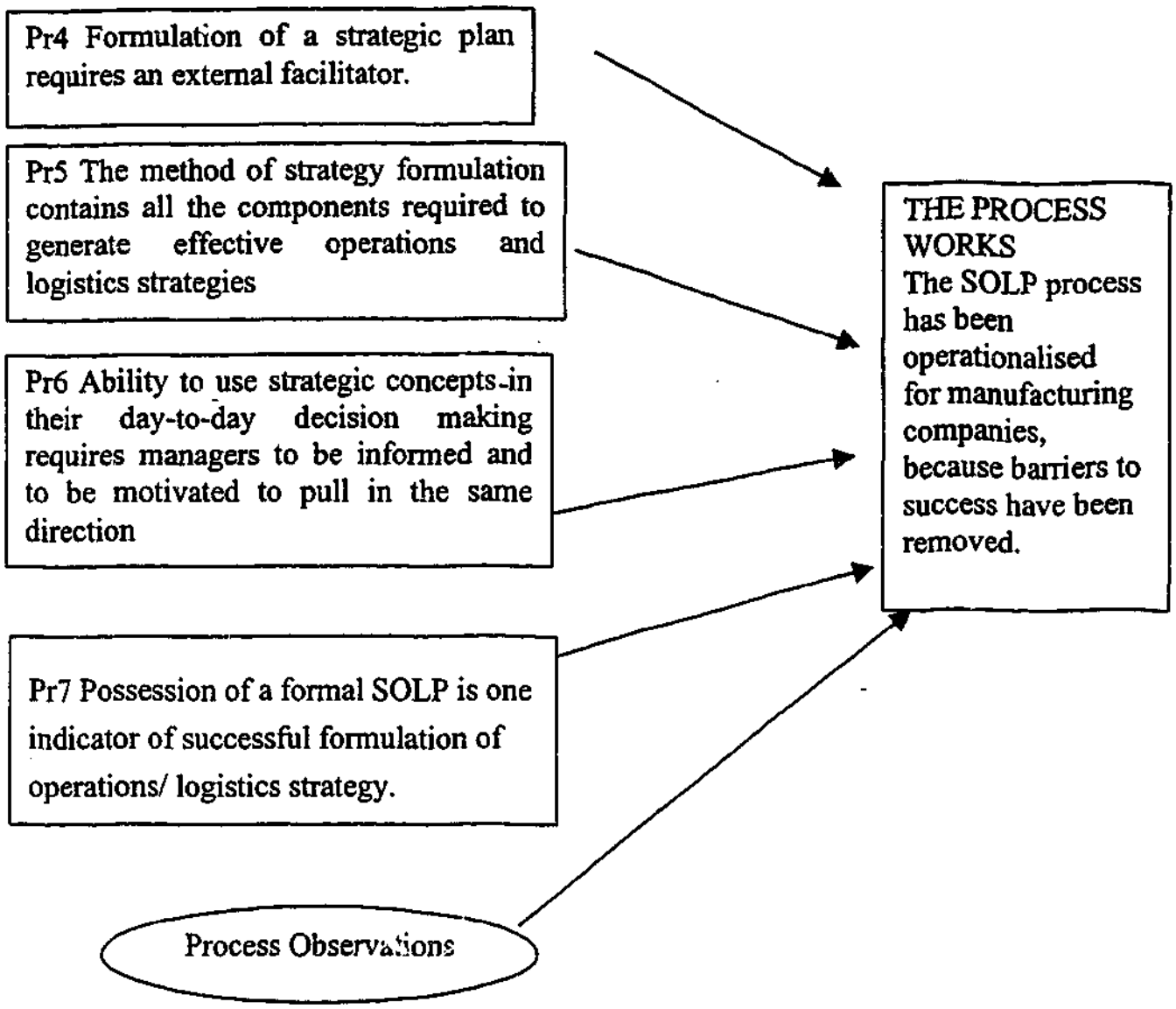


Figure 8.2 Links between propositions and the second research hypothesis

tasks, which have been authorised by inclusion in a plan endorsed by the whole team and accepted by the appropriate senior manager. A one-page Action Plan for each product family is less liable to be filed away and forgotten than a larger strategic planning document.

The presence of a major customer to be interviewed by the whole team at one of their meetings is also considered important to the accomplishment of the planning task. This was observed by Perry (1997, p. 234-236) in deriving effective strategies for supply of products to customers in the Australian Textiles, Clothing and Footwear Industry. Having a customer physically present is believed to help team members to

fully consider the needs of customers whenever customer order winners are considered. This exposure to customers in the planning process is particularly important when the size of a business precludes regular contact between operations managers and customers. All these potential barriers have been removed by the application of SOLP reported here.

The validity of the second hypothesis is also examined by Propositions 4, 5, 6, and 7, which will be considered in turn. Proposition 4, 'Formulation of a strategic plan requires an external facilitator', is conclusively supported by the process observations examined above. Furthermore the information from the interviews, discussed in section 8.2.4, provide strong support because team members are in favour of an external facilitator and rarely criticised the facilitator. Combining this evidence gives overwhelming corroboration that this proposition is valid.

Proposition 5, 'The method of strategy formulation contains all the components required to generate effective operations and logistics strategies' gains credence from the dearth of suggestions from team members that any step is missing from the SOLP process (refer section 8.2.5). This absence of additional steps identified by team members is not, by itself, sufficient to validate the proposition. It is conceivable that extra steps are required that are not recognised by persons within the process. However, there is strong evidence for the success of the overall process, as examined in section 8.2.1 and above in this section. It seems unlikely that the overall process would be so successful, in companies with restricted management development, if any essential part was missing. Hence it is concluded that the proposition is supported.

The sixth proposition: 'Ability to use strategic concepts in their day-to-day decision-making requires managers to be informed and to be motivated to pull in the same direction.' gains considerable support from the team cohesiveness felt by members in the majority of applications. However, the evidence is not sufficiently direct to be conclusive. Proposition 7, 'Possession of a formal SOLP is one indicator of successful formulation of operations/ logistics strategy' is considered to be supported by the existence of formal SOLP outcomes, especially Action Plans, at each of the four processes, which themselves were successful.

Combining all these process observations and valid propositions, there is conclusive support for the hypothesis that 'The SOLP process has been operationalised for

manufacturing companies, because barriers to success have been removed'. No barriers to success have been found in the four process applications. Further comment on this conclusion is made in section 9.1.

8.3.3 The Extended SOLP effectively links operations and logistics strategies

Figure 8.3 demonstrates which propositions and observations provide evidence about the hypothesis 'An extended MAA process (SOLP) effectively links operations and logistics into a complete functional strategy'.

The type of strategy, which was formulated at each application of the SOLP process, is one indication whether a complete functional strategy, linking operations and logistics, has been determined. Examination of the four sets of strategies formulated, refer section 8.1.3, shows the overall emphases listed in Table 8.17. Although the supply chain emerges as an important emphasis in the second process at Bradley, there is no strong prominence of logistics or supply chain decision areas. Consequently the amount of support for this hypothesis from process observations is limited.

Process application	Main emphases
Flock	Quality, capital expenditure
Wilson	Process improvement, employee training
Bradley – process 1	Process improvement, product range, quality
Bradley – process 2	Process improvement, employee training, supply chain

Table 8.17 Main emphases in strategies

Proposition 7, 'Possession of a formal SOLP is one indicator of successful formulation of operations/ logistics strategy' has already been shown to be supported by the existence of formal SOLP outcomes, especially Action Plans, at each of the four processes (refer section 8.1.3). This proposition also supports the hypothesis that the process enables a complete functional strategy to be formulated since the teams, in each case, considered that they had implementable operations and logistics strategies.

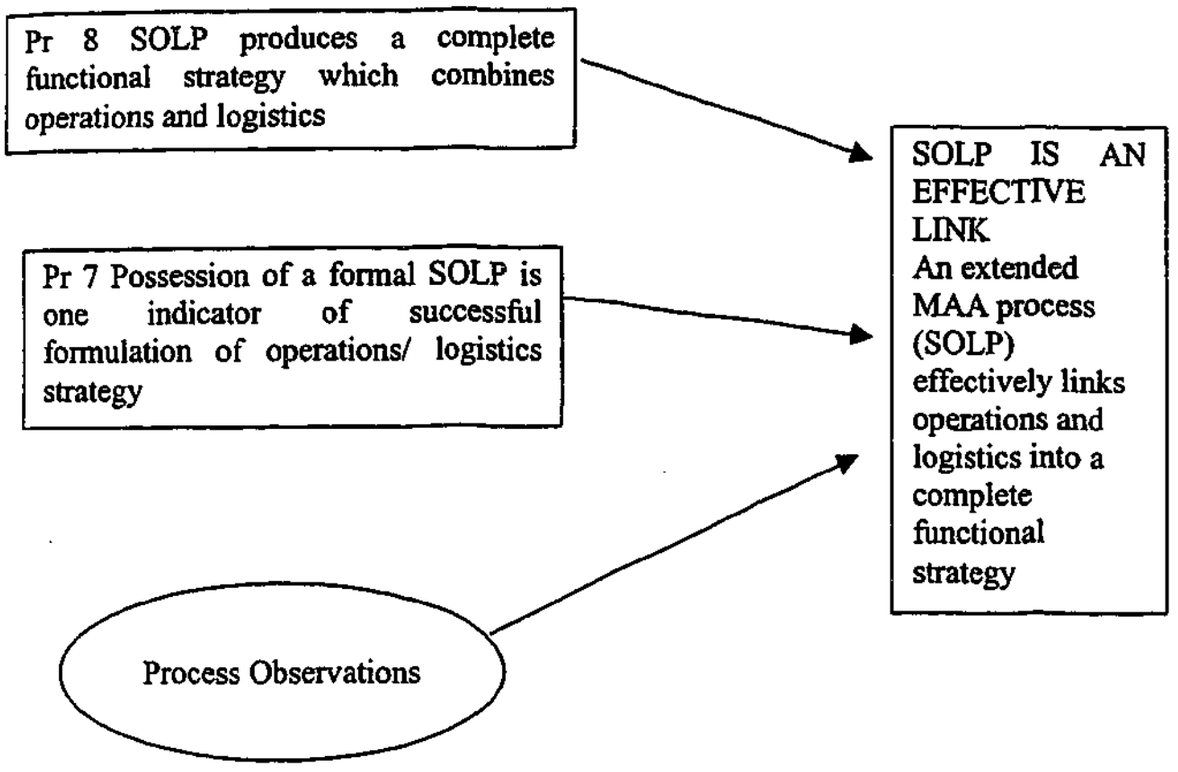


Figure 8.3 Links between propositions and the third research hypothesis

Proposition 8 'SOLP produces a complete functional strategy which combines operations and logistics' is supported by the existence of logistics tasks in all except one of the process Action Plans (refer section 8.2.8). Also, a great majority of team members at Bradley consider that the supply chain is important to their position (refer section 8.2.8).

Putting these two pieces of evidence together does not prove that the functional strategy is *complete.* Hence it is concluded that only moderate support has been found for Proposition 8.

Bringing this evidence together, whilst there is some support for the hypothesis, it is not proved conclusively. This conclusion is further examined in section 9.3.1.

8.3.4 The SOLP process contributes to improved strategic decision-making

Figure 8.4 demonstrates which propositions and other observations provide evidence about the hypothesis 'The SOLP process contributes to improved strategic decision-making by improving strategic actions of the managers involved.' From the observations of the SOLP process at the Bradley meatworks, clear evidence of the successful implementation of many of the strategies has been presented in section 7.6.1.4. Also one strategy, for Boxed Beef, was largely implemented at Flock (refer section 6.1.2).

Each process application gives support (refer section 8.2.9) to Proposition 9, 'Preparation of a strategic plan is not an end in itself: it is a step on the road to strategic operations management'. At all meatworks, most members wanted further personal development so that they could contribute to strategic management.

Proposition 10 states 'SOLP leads to advantage over competitors through improved operations performance'. Whilst there is some evidence from team members that operations performance has improved, this proposition is unproven because no link to competitive advantage has been made (refer section 8.2.10).

Proposition 11, 'Managers need to have a long-term orientation to take strategic initiatives', has received some support, although less than conclusive.

Moderate support has been found for Proposition 12, 'Operations/ logistics strategy must be communicated throughout management (often expressed as throughout the organisation) in order to make a difference in performance.' There is no doubt that the SOLP process has improved communications between managers in strategic areas. There is no proof that there has been a difference in operations performance in the companies researched, so the overall proposition is not proven.

Convincing support has been found for Proposition 3, 'Implementing SOLP leads to observable end results.' The observed results at Flock and both Bradley applications have already been documented (refer section 8.1.3). These results lead to the conclusion that Proposition 3 is valid.

Taking all this evidence together, it is clear that SOLP makes some contribution to improved strategic decision-making by the managers involved in the process. The

extent of that contribution depends upon the type of decision considered. This finding will be discussed further in section 9.2.3.

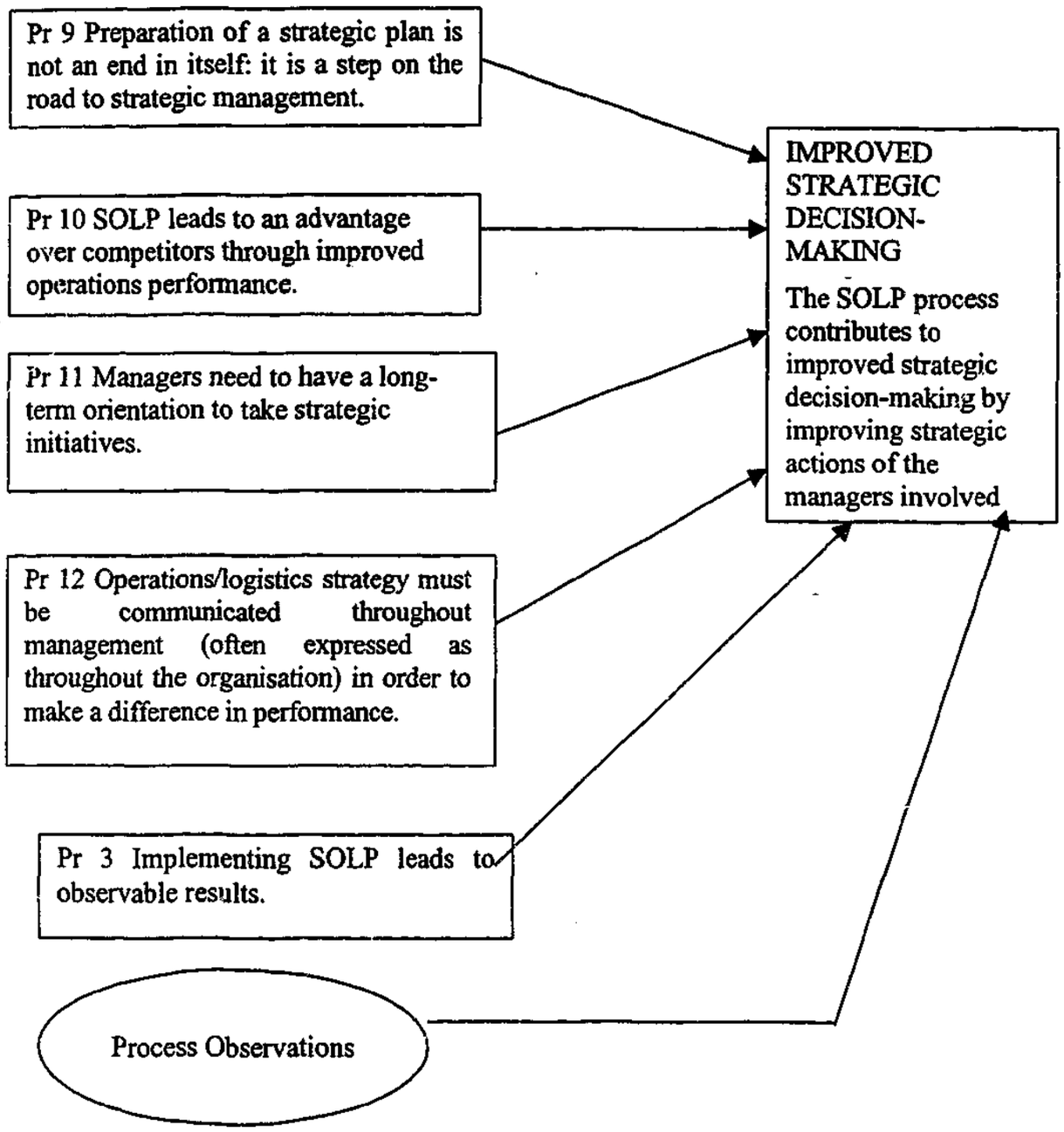


Figure 8.4 Links between propositions and the fourth research hypothesis

8.3.5 Action Research engenders an effective SOLP process

Figure 8.5 shows the sources of evidence about the hypothesis 'Action Research provides an approach which engenders an effective SOLP process.' Process observations provide strong evidence that Action Research gives important assistance to the SOLP process (refer section 8.1.4). Action Research provides a natural environment in which researcher and team members can work together to achieve their separate, non-conflicting aims. It enables the steps of SOLP to be taught and provides motivation for members to complete the process in the early stages before they have achieved their own motivation by an understanding of the potential, valuable outputs. It is a strong factor in the creation of democracy between team members, which is very important for idea-generation and commitment to the outcomes. For example, at Flock the facilitator kept the Managing Director out of the discussion on export sales at first to enable a more democratic input by other team members (refer section 6.1.1). Also, at Wilson, members gained a shared vision with consensus reached by filling in the Strategy Derivation and Action Plan worksheets (refer section 6.2.1). Action Research also enables the facilitator to tailor the process to the particular needs of team members in terms of rate of progress, content of worksheets and the steps included. Putting all these observations together strongly supports this hypothesis.

Proposition 2 states 'Improved management performance is indicated by managers' own views and by attainment of operational milestones on the way to improved business performance.' This proposition is supported by managers' views, expressed in interviews, and by the operational results achieved when the Action Plans were implemented (refer sections 7.6.1.4 and 8.1.3). It lends support to this hypothesis because an ineffectual research technique would be less likely to have these outcomes.

Proposition 3, 'Implementing SOLP leads to observable end results,' has been examined above (section 8.2.3) and found to be valid. It also lends support to this hypothesis because an ineffectual research technique would not enable teams to obtain the planning outcomes described.

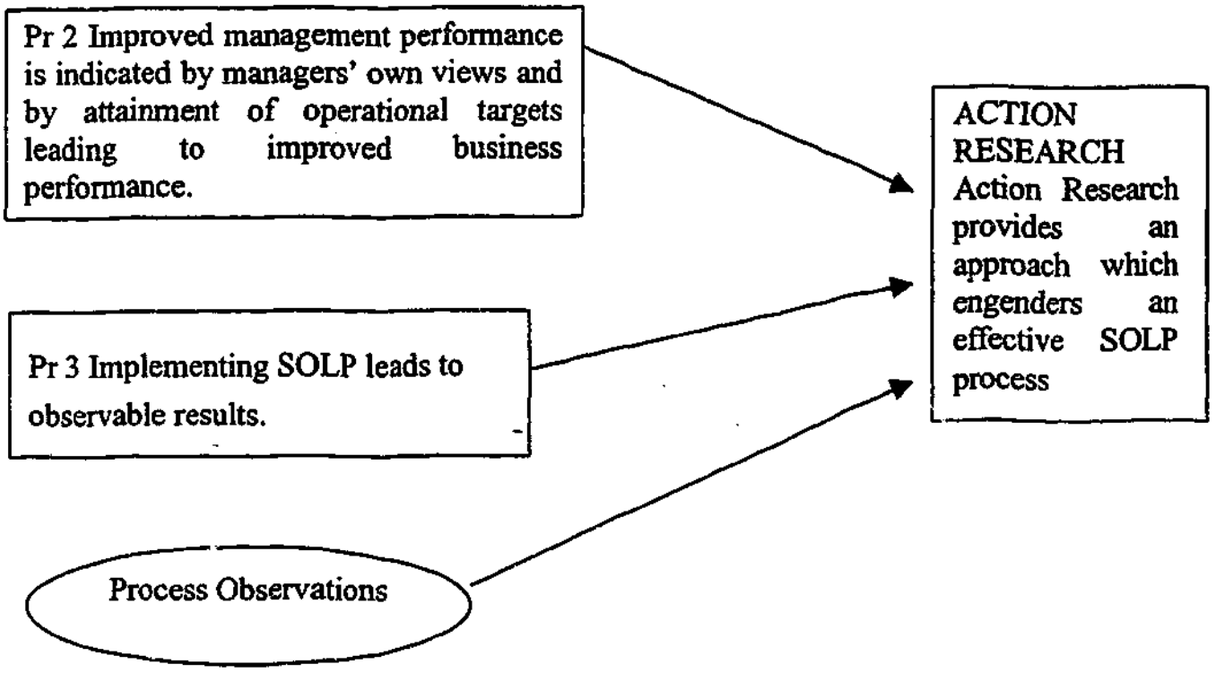


Figure 8.5 Links between propositions and the fifth research hypothesis

The two propositions examined give only indirect support for the hypothesis but the process observations give very strong support. Bringing these together, the fifth hypothesis is considered to be valid. This conclusion is examined further in section 9.4.

This chapter has interpreted the results obtained at four applications of the SOLP process to determine how effective the process is and to judge the degree of support given to the research hypotheses. Chapter 9 considers the contributions that this research project has made and states the implications that the project has for the planning of operations and logistics.

CHAPTER 9

CONTRIBUTION AND IMPLICATIONS

"Any plan is bad which is not susceptible to change." (Bartolommeo de San Concordio, 1475-1517).

Building on the analysis reported in Chapter 8, this Chapter explains the contribution made to the development of knowledge by applying the process of Strategic Operations and Logistics Planning (SOLP) in Australian meatworks. Action Research provides the setting in which this process enables meatworks teams to produce strategic plans and implement them for the benefit of their businesses. The implication of these contributions for companies is explored by discussing:

- what is now known about the process of formulating operations and logistics strategies;
- the types of decisions required in meatworks operations compared to those in other companies;
- how enterprises can use the supply chain findings to better manage their own logistics and their relations with supply chain partners;
- how Action Research can be used in operations and logistics disciplines to provide richer data through superior contact with the processes inside companies;
- guidelines for companies to choose facilitators; and
- the characteristics those facilitators require to be effective.

9.1 Process of Formulation of Strategic Operations and Logistics Plans

This section examines the contribution that the current research makes to understanding a process of operations strategy formulation as applied to Australian meat processing companies and extended to include the logistics function. It then describes how those results can be used by meatworks and the extent to which they are applicable to firms in other industries.

9.1.1 Plans for Operations and Logistics of Meatworks: Contribution and Implications

The following demonstrates how the process of Strategic Operations and Logistics Planning provides more assistance in formulating meat industry plans than previous processes.

As described in section 5.3 and illustrated in Table 8.2, several formal changes have been made to the steps in the Manufacturing Audit Approach (Platts and Gregory, 1990, p. 6-26) in order to create SOLP. Firstly, the involvement of customers in speaking to team meetings provides an important, common source of information to operations and other managers who usually have little or no customer contact. The positive effect that this change made at the two meatworks that used it properly is described in section 8.1.1. Secondly, the removal of a worksheet on Opportunities and Threats, which was found to be unhelpful in the test at Trico (refer section 4.3), helped the meatworks teams to complete the process more quickly. Thirdly, the team's use of time-phased Action Plans, which bring together on one sheet all the actions required to implement an operations and logistics strategy in time sequence, are shown to be a very valuable support for the teams (refer section 8.1.1). Such plans are also a valuable, succinct aid to decisions well after the process has been completed.

Strategic Operations and Logistics Planning improved previous processes by embedding the process into regular management tasks at the third meatworks studied, Bradley. Bradley has used SOLP three times at October 1999, two of which are described in this thesis. Anecdotal evidence suggests that greater facility and usefulness is gained by a company with successive repetitions of the process.

A further contribution made by the process of SOLP is the removal of obstacles to successful formulation, in areas of group dynamics, by teams in meat processing companies. The following improvements to the process, in addition to the changes in steps described above, are found to remove all the known obstacles (other than managerial competence of team members) to successful operations and logistics planning:

- external facilitation;

- group consensus; and
- tailoring to the precise business and structural situations of companies.

External facilitation provides a researcher, who knows the process intimately, as an independent source of education, coaching and motivation, at each team workshop (refer section 8.1.4). Group consensus is made possible by the presence of a facilitator who reduces the influence of the normal hierarchy and power structures so that all team members can both contribute to the planning process and feel that their contribution is valued. The essential nature of this facilitation to meatworks achieving consensual SOLP Plans is discussed in section 9.5.

Tailoring implies that the process application is amended in many ways by the facilitator to assist the specific needs of team members due to their background, company culture and knowledge. Typical amendments are changes to worksheet headings, choice of the team sub-groups who work together on particular product families, and the order in which worksheets and other agenda items are carried out.

Australian meatworks are considered to be a challenge to SOLP implementation because most managers have a limited education. Very few of these team members had previously been involved in strategic planning. Also the three meatworks investigated had scores, according to the Hayes and Wheelwright (1985, p.396) stage of operations strategy evolution, of 2.5 (Flock), 1 (Wilson) and 3 (Bradley) out of 4 (refer Table 8.4). These scores are the focus of affirmative answers to the nine parameters used by Hayes and Wheelwright for each meatworks studied. This confirms that the Wilson works had a low stage of operations strategy development and the other two works a moderate stage, according to this particular test. In all four process applications, four Action Plans were compiled by a team of managers and these Plans contained major decisions. These decisions result from a number of factors in which the assistance of the SOLP process is a pivotal factor.

There is evidence that the SOLP process becomes less effective when management competence and education fall below a certain level. The considerable operational and logistics differences between the meat industry and most other industries, discussed below, may be a factor. The difficulties which the Wilson team found with the process (refer section 6.3) compared to the other two meatworks implies that there is a level of

management competence below which the SOLP process is unlikely to be successful. Wilson had lower management abilities, competencies and educational levels than observed in the other two meatworks. It had a lower operational attainment on the Hayes and Wheelwright scale of 'Internally Neutral' compared to the 'Externally Neutral' attained by Flock and Bradley. The required strategic operations management capability is believed to be approximately 'Externally Neutral' according to this classification.

Differences, such as the perishable nature of products, the food safety requirement and the manual processing of animals are considered to make the meat processing industry considerably different from other manufacturing industries (section 5.2). These differences do not prevent the SOLP process from being effective in this industry.

Hence the research provides strong evidence that the formal changes made to process steps and the better group dynamics engendered by external facilitation enable teams of operations, logistics, marketing and other managers to formulate effective SOLP plans. Thus SOLP is operationalised for all manufacturing companies whose management capability and training are sufficient to undertake the vision, concentration and creative thinking required.

Several other improvements in strategic management were observed (refer section 8.3.4). Communications between managers improved in all four processes (Tables 6.16 and 7.16). Heightened ability to make strategic decisions varied between meatworks, from a minority of managers at Flock, to half at Wilson and nearly two-thirds at both Bradley processes (Table 8.14).

Specific examples of improvements are:

- the ability of operations managers to coordinate with marketing managers at Bradley;
- communications between SOLP team members at Flock;
- managers no longer working in isolation, according to the Organisation Development Manager at Bradley (Table 7.21); and
- more professional behaviour and better performance of Quality Assurance Officers at Wilson (Table 6.19).

The implementation of Action Plans, to a greater or lesser extent after every SOLP process, implies that SOLP contributed to the ability of companies to manufacture and distribute products which meet customers' requirements. It is considered likely that this improved performance contributed to better business performance, although this link is not proven because a number of other factors are equally causal. The research was not designed to measure this overall output effect.

Having described the contributions made by SOLP to meatworks, the implications are now addressed. Meatworks in Australia can use the SOLP process with confidence to formulate plans for their operations and logistics functions. The twelve steps developed (refer section 5.3.2) and the reduction in obstacles (discussed above) are confidently recommended to enable meatworks to achieve strategic planning in these functional areas, which hitherto have lacked such ability. Meatworks executives can use the Hayes and Wheelwright (1985, p.396) strategy evolution measure and data about the education and capabilities of their managers to judge whether SOLP is likely to be successful if used at their works. Any meatworks with a strategy evolution less than 'Externally Neutral' or low management capabilities (refer discussions of individual meatworks in Sections 6.1, 6.2 and 7.6) is believed to be unlikely to profit from the SOLP process. Such managers are likely to lack the concentration and creative thinking required.

There is some evidence that repeated use of the SOLP process improves its effectiveness. The single use of SOLP at Flock and Wilson, whilst deriving an agreed set of forward strategic actions, was only partially successful in promulgating strategic management of the operations and logistics functions. The two replications of the SOLP process at Bradley, where the process is now (October, 1999) being carried out for a third time, were more successful. The output of successfully implemented strategies at Bradley was considerably greater than at Flock or Wilson (refer section 8.1.3). The communication of strategies to the management team and the consequent beneficial effects on performance were considered greater at Bradley than at the other two meatworks, by the managers interviewed some time after the process (refer Table 8.7, lines 13 and 13a). Changes to processes were made as an outcome of the process, according to the two managers interviewed at Bradley, whereas only one out of two managers interviewed at Flock and Wilson held this view

(Table 8.7, line 2c). The implication of this evidence is that the SOLP process becomes significantly more useful when carried out several times and embedded into management procedures.

Considering the above contributions together, implies that the SOLP process can assist companies to improve the *strategic* component of their management and hence use the operations and logistics functions to become more competitive.

9.1.2 Involvement of Internal Logistics

Previous research evidence (Jouffrey and Tarondeau 1992, p. 167-185) suggests that the concurrent determination of strategies for both operations and logistics functions would be more effective. Through modifying the Manufacturing Audit Approach (Platts and Gregory 1990) into Strategic Operations and Logistics Planning, the present work creates a process which can link operations and logistics functions of a meatworks company into a complete functional strategy (section 8.3.3). This is achieved by including various logistics managers in the planning team. For example, the Bradley team contained the Logistics and Meat Purchasing Managers. Logistics policy areas such as Distribution, Suppliers and New Product Introduction were added to worksheets which already included Vertical Integration and Control Policies (see Table 6.6). Game Plan team interviews with customers were added to the process. Team members, who frequently display 'tunnel vision' for their functional departments, were taught the relevance of all members of the supply chain to the performance of the manufacturing operation. The result of these changes is a process which is capable of considering operations and logistics functions equally. This is demonstrated by the presence of logistics policies in all except one of the sixteen Action Plans generated during the four processes (refer Table 8.5).

The extent of development into logistics is considered to be quite successful in meat processing companies. It can be used by enterprises who wish to incorporate logistics with operations in their functional plans. However, this joint planning of two functions of manufacturing firms is a major change which requires more research (refer Chapter 10).

9.1.3 Implications for the Planning of other Firms

The current research suggests that the SOLP process can be operationalised for manufacturing companies whose management capability and training is sufficient to undertake the vision, concentration and creative thinking required. The applications of SOLP in meatworks were very successful at Flock and Bradley. They were useful and moderately successful at Wilson, where management capabilities and training were rather low for strategic operations planning. The application of the Manufacturing Audit Approach at Trico and Engineering Workshops, embodying many of the facets later incorporated into the SOLP process, was successful in car component manufacture (refer section 4.1) and an emergency vehicle maintenance and service workshop (section 4.2).

Consequently it is argued that the SOLP can be confidently applied to any manufacturing company whose management capability and training meet a minimum level of competence. No reason is known why the process should not be equally successful in other manufacturing industries. One guide to the degree of competence required is the level of strategy evolution achieved (section 8.1.2) which should be at least Externally Neutral (Hayes and Wheelwright, 1985, p.396). SOLP is believed to be a process which meets Skinner's (1992, p. 13-25) concern that, whilst the theoretical justification for operations strategy is very strong, the implementation by manufacturing companies has been limited.

It is believed that SOLP has every chance of success if applied to service operations environments such as banks, hospitals and shops. Some changes to the nomenclature of worksheets would be required, such as the use of service groups rather than product families. Tailoring of worksheets and the order of process steps (refer section 9.1.1) would also be required in the same way as for manufacturing firms. Such an application of SOLP to a service enterprise is not regarded as proven, only as an extension without apparent obstacles.

9.2 Operations and Logistics Decisions in Meatworks

A second set of contributions and implications refers to the types of operations and logistics strategic decisions made in meatworks, the extent to which they are different

from other enterprises and the amount of improvement in managers' ability to make such decisions.

9.2.1 Decision Types

The present work shows that the categories of strategic decisions made by meatworks managers vary only slightly from those used by Platts and Gregory (1992, p. 42) with six high technology companies in Britain. Meatworks used all of Platts and Gregory's order winning criteria except one, and added from one to three new criteria per works. The criterion omitted was 'delivery speed' on the basis that fast delivery was a qualifier in meat processing which was always achieved due to the limited life of the meat products. Bradley was notable in adding three new criteria (packaging, food safety and shelf life). This research provides two contributions. Firstly, it demonstrates that widely-accepted decision categories are applicable to the Australian meat industry. Secondly, it suggests that decision categories need to be tailored for individual companies and industries. Some researchers (Roth 1996, p. 563-568) argue that a generic set of decisions can be applied to all manufacturing companies. This research suggests that managers need to review the generic decision categories, either because their operations are genuinely different or because putting categories in their own words assists them to think about their business situation. The implication of this finding is that meatworks, and other firms, should build their own lists of order winning criteria, rather than accepting a generic list from other work.

The most prevalent Decision, or policy, Areas in the operations of Australian meat processing companies are described for the first time. The four meatworks applications in this study are compared in Table 8.4. This comparison shows that the following four Areas were considered to be the most important by the meatworks teams involved:

- Production and Technology;
- Human Resources;
- Facilities (Works); and
- Producers/ Suppliers.

It is notable that one Decision Area, 'Producers/Suppliers' is part of the logistics function rather than the operations function of meatworks. This result highlights

particular Decision Areas to concentrate upon when researchers or managers investigate meat processing companies.

The Hayes and Wheelwright matrix (1984, p. 396-401) was found to be very useful in measuring the stage of strategy evolution attained by each meatworks investigated. This matrix enables a succinct comparison of the stage reached by each meatworks to be made (Section 8.1.2, Table 8.4). The measurement of operations strategy stage is a useful result for managers to understand the extent of development of their operations function. The failure of any of the three meatworks to achieve the highest level of strategy evolution is notable. It is not known how representative this sample is, but the evidence is not encouraging. It is likely that many overseas competitors of the Australian meatworks, such as meatworks in New Zealand, USA and Europe, have attained greater strategy evolution than the two works with the lower scores, Wilson (score 1 out of 4) and Flock (2.5 out of 4). It is argued that Australian meatworks need to better understand Operations Strategy to improve their competitiveness.

9.2.2 Extent of Difference between Meatworks and other Companies

This contribution is based on the second part of the first hypothesis: "The SOLP process can be applied effectively to the meat processing industry, which has some significant differences from other manufacturing industries." Indications prior to the research suggested that meatworks are significantly different from other industries.

Four of the six factors already considered (refer section 5.2.1 and the work of Bodi et al. 1997) support the theory of significant difference. The rapid perishability of product with time, and the extreme need for food safety in all supply chain links, make meat processing different from most non-food processing industries. Meat processing requires more care than many other food processing businesses. The manual content of most of the work in abattoirs, which frequently requires three-dimensional cutting skills on different-sized carcases, appears to separate these meatworks from other industries. However, the strong ability of employees to learn and adapt to different conditions may mitigate this apparent contrast. The same argument applies to the next factor, the harsh working conditions in which dressing and boning are carried out. Finally, there are animal-to-animal variation in muscle

materials due to age, breed and sex, and there are natural peaks of animal availability at certain times of the year. These two factors are considered to make the production and supply chain's task of satisfying customers with a standard specification of product more difficult than the tasks in other industries.

Against the theory of significant difference are the mitigating factors already cited and the majority view of the senior managers interviewed some time after the SOLP process was applied. Table 8.7 indicates that only one of the six managers considered there was a significant difference, whereas three out of the six thought the difference was not significant.

Balancing these two sides of the argument, it is concluded that the meat processing industry is, indeed, quite different from most other industries, but not to a significant extent. The important implication of this conclusion is that techniques, which have been developed for other industries, can most likely be applied to meatworks, provided they are tailored to account for the special situations that occur in meatworks.

9.2.3 Improvement in Strategic Decisions?

Investigation of the fourth Hypothesis (section 8.3.4) concluded that the Strategic Operations and Logistics Planning process contributes to improved strategic decision-making by the managers involved. The extent of contribution depends upon the kind of decision considered. Major contributions to strategic capital expenditure decisions were observed, such as the decision by the Flock company to build extra chilling and storage facilities. A major contribution to product re-development through operations and logistics was made. For example, the 'Fresh Sausage-Retail' product-family-channel was re-developed in an Action Plan in the first application of SOLP at Bradley, leading to re-vitalisation of the product-channel and additional turnover of $3.5 million one year later.

Considerable contribution was made to understanding the overall business, customer and functional context in which all decisions are made. For example, operations managers in the Bradley team widened their grasp of customer needs and their relations with other company functions. Improvement of the longer-term, strategic dimension of regular operating activities by managers occurred to a limited extent.

However, SOLP was embedded into regular management tasks in one application, at Bradley. Unlike the other applications of SOLP, at Bradley the Game Plan process was repeated: twice during the reported research and for a third time at the time of writing (October, 1999). This embedding is regarded as a promising means of enabling managers to extend their ability to incorporate a strategic perspective into such operating activities.

9.3 Formulation of Strategic Operations Plans by entire Supply Chains

This section considers the contributions which the research makes to the joint preparation of strategic plans by each enterprise involved in a complete supply chain from raw materials to end consumers. The two sub-sections address the implications for meatworks and for other companies.

9.3.1 Contribution and Implications for Meat Processing

Extension of SOLP into a process covering all companies in an integrated supply chain from farmers to retailers provides a process with apparent merit. At the heart of this process is the creation of a team of managers which represents all the firms in the supply chain. This team, working in an Action Research situation with an external facilitator, goes through the steps of the SOLP process in a number of meetings. Essential steps are:

- the formation of product-family channels,
- the determination of order winning criteria for those product channels,
- derivation of the operations and logistics objectives to steer towards,
- audit of the status of operations and logistics policies throughout the supply chain, and
- formulation of the strategies required to achieve those objectives in the form of Action Plans by policy area and time sequence for each link in the supply chain.

Testing of this extended process shows merit. At the third meatworks, the extended process was carried out twice with an external boning room manager in the planning team (section 7.5) and the team spent a day visiting customers in the second application. The resulting Action Plans included a number of supply chain actions but

were strongly biased towards the smallgoods manufacturer. Bradley's Operations Manager opposed the idea of including a manager of the supermarket chains in the team because of the rivalry between several chains and the danger that confidential information might be divulged to third parties. The implication is that the extended process appears to meet the criteria required for joint operations planning by partners in entire supply chains (section 7.2) but the testing is not sufficient to judge its full capability or limitations.

It is possible to imply some of the conditions which need to be met to achieve full cooperation between supply chain partners in the planning team. The proposed conditions are:

- The product-family channels being planned are handled by single organisations at each stage in the channel. If multiple organisations are involved at any stage, they are required to have cooperative rather than competitive relationships,
- Cases where strong threats to the commercial success of the product-family channels and hence members are prepared to plan together for survival, and
- The product-family channel has such a strong hold on the supply chain and sales that its members do not fear commercial competition.

9.3.2 Implications for other Firms

In a similar manner to the application of SOLP to single companies in other industries (section 9.1.3), the current research provides evidence that the extended SOLP process can be used for all the partners in a supply chain in any manufacturing industry, provided the managers are sufficiently capable and prepared to devote time to undertake the creative thinking required. The applications of extended SOLP at Bradley are only regarded as a partial test of the new planning concept. However, the application of the MAA at Trico and Engineering workshops (refer sections 4.1 and 4.2) supports the likelihood that extended SOLP can work in other industries.

9.4 Action Research M[illegible]

This section examines the implications [illegible]e Action Research (AR) technique used in the project may have for research into Strategic Operations and Logistics Planning. Section 8.3.5 concludes from process observations that AR is an important factor in making the SOLP process effective. The ability to have a researcher present with his or her own set of duties, the responsibility to facilitate team workshops, is [illegible]y important in engendering success because team members do not fear that the researcher will interfere in their business. The researcher is able to educate and guide the planning team without adding any bias to the outcomes.

The longitudinal nature of the process, in which seven workshops take place over a period of several months, enables the researcher to get to know team members in depth over that period. This engenders trust, acceptance and preparedness to divulge details of each manager's reaction to the process. The richness of the resulting data exceeds that available from other methodologies. The longitudinal process is also considered to increase the likelihood of successful strategy formulation. The repeated effect of workshops interspersed with other duties is believed to be more effective than a long, once-off workshop (used by Platts and Gregory 1992; and Miller 1988). The longer process allows time for ideas to develop and for consultation between team members. A new vision for the company's functions may grow from a number of inputs, given time for thoughts to coalesce.

So far Action Research has rarely been used in operations or logistics strategy formulation (Eden and Huxham 1988, p. 889-900). It is argued that AR provides richer data than survey and interview techniques and should therefore be considered by researchers in these functional areas. Action Research is particularly appropriate when the management tasks studied involve teams and when the actions carried out are based on concepts rather than concrete matters. However, AR requires acceptance by the firm's management and the researcher must invest a lot of time in the project. The implication is that AR is a very successful method of accessing industrial situations to obtain rich information.

9.5 Guidelines for Companies and Facilitators

This section suggests guidelines to help companies to use the SOLP process and proposes a set of attributes required by facilitators.

9.5.1 Guidelines for Companies

It is suggested that Action Research is a superior method to enable companies to carry out strategic planning. In AR the researcher can act as facilitator to the planning team, as adopted by the SOLP process (refer section 9.4) and as suggested by Eden and Huxham (1988, p. 889-900). In the present study, AR has been an excellent method of obtaining valid access to an industrial situation over a period of several months. It enables the researcher to coach team members and to increase the extent of democracy practised in team workshops. The researcher actively discourages senior managers from pre-empting the process and encourages individuals to express their views in worksheets and discussions. Action Research is considered to be an essential contribution to the success of the process since *all* the senior managers interviewed after the process (refer Table 8.7, line 6) saw it as very important.

Companies which are using AR need to choose a facilitator. The following guidelines assist companies to choose a facilitator drawing upon experience gained in the present research (refer Chapters 6 and 7). The facilitator should:

- be chosen from people external to the company;
- be knowledgeable in business operations and logistics, preferably having previous business experience in one of these areas;
- have sufficient presence and seniority to command respect from team members;
- have good people skills to smooth relations between team members, to promulgate acceptance of the extra duties imposed by the Game Plan process and to motivate members at the start of the process to follow the process to completion; and
- have a good knowledge of the SOLP process to provide coaching and to shoulder responsibility for the process, so that team members can concentrate on content decisions.

9.5.2 Who should Facilitate?

Sufficient experience has been accumulated to indicate the attributes required by a facilitator and to provide a recipe for him or her to use to enter an enterprise and co-ordinate a SOLP process. It is important to make the right point of contact in the company (Platts 1990, p. 62-66). The best contact is the operations, logistics or manufacturing manager if s/he is sufficiently senior to be able to commit resources to SOLP. Often a more senior manager or owner, such as a General Manager or Managing Director, would be the preferred person to approach first. The facilitator should play an active part in the choice of team membership and size because senior managers' experience is predominantly in selecting members for operating rather than strategic tasks. The rather different mix of members required for an SOLP team, in general, is as follows:

- several managers and supervisors from the operations function including a manufacturing engineer;
- logistics managers such as purchasing, warehousing, transport and distribution;
- one or two marketing managers;
- the most senior operations manager and his/her superior;
- the quality assurance manager;
- financial controller and information technology manager; and
- senior operations manager from each partner in the supply chain.

The facilitator requires good inter-personal and organising skills to be successful in supporting a SOLP team. He or she needs to be able to relate to all the varied personalities and 'job types' of team members. Some motivating ability is needed to keep members' interest during a potentially boring two-hour meeting, especially at the start of the process. Many managers dislike attending meetings because this prevents them from progressing their own work. A two-hour meeting is very long for managers whose focus usually changes from one area to another every few minutes. Several managers at Trico (refer section 4.1) and one at Bradley (refer section 7.6.2, Table 7.17) have stated that they feel 'brain dead' after a two-hour SOLP workshop. Consequently, for the first few meetings the facilitator is required to engage team members' interest until their understanding of the process and the benefits they will obtain from its output gives them sufficient motivation to continue with purely

process support. It is very helpful for the facilitator to have an extensive knowledge of the industry in which he or she is working. Since the majority of managers in the Australian meat industry have limited knowledge of strategic issues, it is important for the facilitator to have sufficient knowledge of industry policy to prompt managers from time to time during team meetings.

Facilitators should have prior experience in educating groups of adults. This could have come from lecturing, teaching or training company personnel. They need to have sufficient time available when the enterprise requires it. SOLP meetings were held at Flock at lunchtimes, at Wilson at 4 pm and on Fridays mornings at Bradley. Such facilitator requirements can be assisted by the use of a second facilitator for at least part of the time, as was the case at Trico, Engineering Workshops, Flock and Wilson. Whilst not essential, the presence of a second facilitator provides more input about the process to team members, allows one facilitator to calculate team averages of worksheet responses as soon as the sheet is completed, and provides input to each sub-group when the team is split into two in the later stages of the process (refer section 5.3.2).

The facilitator assists team members to be more democratic in the SOLP process than they are in other work situations. Enterprises in the meat industry are organised on hierarchical lines in common with most Australian industry. The SOLP process is most effective when each member is able to put in his/her contribution. Hence the facilitator requires skills to enhance the following situations:

- enable shy members to speak and to fill in worksheets so as to put their point of view;
- reduce the tendency of the senior manager present (that is the Managing Director or the Operations Director) to push his point of view to the exclusion of others; and
- increase the chance of new ideas, policies and strategic actions being accepted by the team as it moves from individual responses to group consensus.

The final Chapter builds on Chapters 8 and 9 to state the conclusions from the whole research project and point to directions in which further research is considered to be profitable.

CHAPTER 10

CONCLUSIONS AND FURTHER RESEARCH

"If a man presumes certainty, he shall end with doubts; if he accepts doubts, he may end with certainty." (Francis Bacon, 1561-1626).

This Chapter outlines the achievements of the present research in the context of prior knowledge. Conclusions from this research are stated and its limitations suggest the further research required.

10.1 Introduction

A method to assist the effective strategic planning of the operations and logistics functions of an enterprise is investigated in this research so that those functions may better contribute to the enterprise's competitiveness and to its position in the integrated supply chain. The steps required by such a process are carefully considered, teams of managers are closely supported in following those steps, and the results are judged by the creation of Actions Plans, their subsequent implementation and the achievements of team members as a result of the process.

Previous research has determined how operations and logistics functions contribute to the development of competitive advantage and the *content* of decisions required (Hayes and Wheelwright 1984; Hill 1989; LaLonde and Masters 1994). An effective *process* is equally as necessary as *content* to enable the enterprise's management team to formulate implementable Strategic Operations and Logistics Plans. The process of strategy formulation is required to be user-friendly, worthwhile and efficient but previous processes are less well-developed (Platts and Gregory, 1990). The abstract, perceptual nature of the process means that the closer the researcher can get to the management team responsible, the more likely it is that he can understand their needs and improve the process. It is also clear that strategic planning of logistics is not as well-developed as operations: the limited frameworks available emphasise audit and reaction to concrete business and marketing plans. Evidence is emerging that

enterprises need to be pro-actively involved in planning the whole supply chain from raw materials to the delivery of the final product to the end consumer (Cooper et al. 1997).

Much more operations strategy research has been carried out in the metalworking industries and 'elaborately transformed manufactures' than in food processing industries. The present research investigates the Australian meat processing industry where more emphasis on supply chain management and worker empowerment is required. In Australian meatworks, functional strategies in operations and logistics have not been well developed.

Prior research into strategic management informs the process steps required by strategic operations and logistics management. The views of the 'emergent' strategy school of strategic management (Mintzberg and Quinn 1991) are predominantly adopted because of its emphasis on strategy process and Action Plans.

The present study is arranged in five phases (refer section 3.1) as follows:

- Phase 1 applies the Manufacturing Audit Approach in two Australian companies to understand the Approach and isolate weaknesses;
- Phase 2 develops the MAA into an SOLP process which caters for the needs of Australian meatworks and designs propositions to focus data collection to support or refute research hypotheses;
- Phase 3 applies the SOLP process in two different meatworks and measures the degree to which team members understand strategic operations and logistics at the start and end of the process;
- Phase 4 extends the SOLP process to examine the whole supply chain and involve representatives of supply chain partners in the planning team;
- Phase 5, mirroring Phase 3, applied the extended SOLP process twice in a third meatworks. Team members' understanding of Strategic Operations and Logistics planning was again measured.

Action Research is the main methodology used in this research. It requires the researcher/facilitator to coach the process of joint strategic planning by operations and logistics functions and to study the process by virtue of that position. The facilitator

observes the interactions of team members in each process and interprets them over a period of time.

This research uses a process of Strategic Operations and Logistics Planning (SOLP) which is more 'useable' (Platts and Gregory 1992, p.53) than the MAA, particularly because it provides time-phased Action Plans. SOLP is developed so that it may be more widely followed by companies. It includes the operations and logistics functions of both the manufacturing company and its supply chain partners to enable determination of a more comprehensive set of strategies.

Research was carried out in the Australian meat processing industry which, although significant in domestic and export turnover, has received very little attention in the planning of operations and supply chains. The SOLP process has been successfully implemented in three meatworks, leading both to plans for action in numerous product families and to implemented strategies. The competitive priorities and types of decisions required in this industry have been investigated and compared with those found in previous research, which has predominantly addressed industries that are very different to food processing.

This study makes a novel contribution to knowledge because the Action Research methodology, which provides a supportive environment for the SOLP process, enables operations and logistics strategies to be formulated in meatworks which lacked a relevant process. SOLP is more user-friendly and effective than previous operations planning processes (Platts and Gregory 1992, p. 29-55; Fine and Hax 1985, p. 28-46; and Menda and Dilts 1997, p. 223-241) because of several new steps and due to the intimate assistance which an external facilitator is able to provide to the planning team during a number of meetings. The improved support which SOLP gives team members enables successful strategy formulation in the meat processing industry, which has received scant academic attention. A comprehensive literature review found no strategic management papers in this field (Andrewartha et al., 1996, p. 81-93). There are also indications that managers in this industry possess fewer competencies and receive less training in general management than those in other industries (Andrewartha et al. 1996, p. 2-67). Consequently success in this difficult working environment indicates that the process is likely to be useful across a wide range of manufacturing companies and their supply chain partners.

10.2 Conclusions about the process of Strategic Operations and Logistics Planning

Seven conclusions about Strategic Operations and Logistics Planning of Australian meatworks are discussed in sequence.

1. The process of Strategic Operations and Logistics Planning developed is an improvement over previous processes as a result of several formal changes to the steps undertaken. Several significant changes to the Manufacturing Audit Approach (Platts and Gregory, 1990), such as the addition of an Action Plan worksheet which provides a time-phased set of strategic decisions, enables the SOLP process to provide more extensive assistance to meatworks teams. Through testing this process in the Australian meat industry, the research demonstrates that SOLP enables teams of managers to formulate effective strategic plans for the operations and logistics functions of their meatworks (refer section 8.1.3).

   The meat processing industry is shown (section 9.2.2) to be considerably different from other manufacturing industries. Nevertheless, these operational differences do not prevent the SOLP process being effective in meatworks, provided management competence and staff training attain the level of 'Externally Neutral' (refer section 8.1.2) on the Hayes and Wheelwright scale of strategy evolution (1984, p. 396-401).

2. The SOLP process makes further improvements over previous processes by changing the way the process is carried out, for example by using an external facilitator. A facilitator is able to coach the team, increase the extent of consensus it achieves and tailor the process to the needs of team members. Hence it is concluded that the SOLP process has been operationalised for meatworks, and other manufacturing companies, with sufficient management capability and training.
3. The SOLP process engenders improved strategic decisions by team members. The extent of improvement depends upon the kind of decision considered, being greatest for capital expenditure decisions. As a result of this process, team members gained a better understanding of the business and customer contexts of strategic decisions.

   Considering these three conclusions together, the SOLP process is shown to increase the ability of companies to provide products which meet the order winning criteria which influence customers' buying decisions. The embedding of SOLP into regular

management tasks, achieved at Bradley, is regarded as a promising means for managers to extend their ability to be more strategic in regular operating activities.

4. The Strategic Operations and Logistics Planning process enables operations and logistics functions of a manufacturing company to formulate joint functional strategies. The research argues that there are strong synergies between operations and logistics, especially in meat processing companies, so that it is advantageous for their strategies to be worked out together. A number of changes to the process, such as adding logistics policy areas to worksheets, assist joint strategy formulation.

5. The categories of operations and logistics decisions taken in the Australian meatworks investigated are very similar to those used by other researchers in this area (section 9.2.1). The most prevalent strategic decision areas in meatworks are found to be production and technology, human resources, facilities and suppliers.

6. The choice of Action Research as the research method is an important factor in the effectiveness of the SOLP process and hence it should be considered by researchers in operations and logistics strategy areas. Action Research, in which the researcher acts as a facilitator to the planning team, is an excellent method of obtaining valid access to an industrial situation over a period of time. It provides richer research information than that available from other methodologies.

7. The guidelines constructed (section 9.5) will assist companies to organise the SOLP process and to choose appropriate facilitators. By using Action Research with an external facilitator, firms can improve the autonomy of individual team members.

10.3 Conclusions for the extension of Strategic Operations Planning to the entire Supply Chain

It is concluded that a process with apparent merit is provided by extending SOLP to cover all companies in an integrated supply chain. At the heart of this process is the creation of a team of managers who represent all the firms in the supply chain. During the process, these managers define important product-family-channels and then formulate the strategies required to achieve customer-driven operations and logistics objectives in the form of Action Plans for each link in the chain.

Testing the extended process twice in a smallgoods company with one supplier in the team and close contact with customers (sections 7.5-7.6) gave the firm very useful results (discussed in section 9.3). However, the extent of development into operations of the whole supply chain is considered to be preliminary. The change to carry out operations and logistics fully in all the partners in a supply chain requires more research and greater preparedness of companies to share their commercial and company situations (refer section 10.5). Hence, it is concluded that a process exists which enables integrated supply chain planning and some experience in its implementation has been achieved. Nevertheless further research is required.

10.4 Limitations

The research has a number of limitations which should be considered when using its conclusions.

Preliminary research in two companies provided empirical evidence to develop the process of Strategic Operations and Logistics Planning. This process was then tested by applying it once in two meatworks and twice in one works. This is a small number of applications but the Action Research methodology used gave detailed access over several months to each business and to every member of each planning team, ranging from 7 to 12 managers in each company. The extensive time which the researcher is required to spend at each process application is considered to be a limitation of the methodology used in this research project.

The findings of tests of SOLP in the Australian meat processing industry cannot be inferred to apply to all meat companies, although no reason is known why they should not. Similarly, the process has not been proved to apply to other manufacturing industries.

The extension of the SOLP process to the integrated supply chain was only tested to a preliminary extent. A good case is made for this extension, but testing has only been carried out at one company over two applications. During these applications, the representation of supply chain members external to the manufacturer on the team was low and the majority of strategic decisions referred to the manufacturer rather than to supply chain partners.

There is concern that company sovereignty may make integrated supply chain planning much harder to achieve than planning within one company.

One of the aims of the research was to provide sufficient support to the process so that barriers to its successful application may be minimised. The research concludes that all known barriers have been removed and finds that team members do not recommend any extra assistance. However, taking the widest interpretation of the findings, it is admitted that there may be other barriers which have not been recognised or which have not impacted on these particular studies.

A key part of making the SOLP process very user-friendly was the provision of an external facilitator from academia for each meeting. Because there was no experience of process application without such a facilitator, it is not possible to say whether the process would be successful without one. It is argued that the answer would depend upon the capability of management in a company and the degree of motivation of team members to complete the operations planning task. There was strong belief by team members (see Table 8.7) that an external facilitator would be essential, but this falls short of proof.

A related consideration in applying the conclusions is the lack of experience in carrying out successive applications of the SOLP process at the same company. The conclusion that the SOLP is successful can be tested by examining acceptance of the process into the regular practices of management. This observation has only been possible at one company. Greater time must elapse and more applications need to be tested before the success of the process can be shown to lead to its permanent adoption.

The extent to which the process can be said to lead to improved business performance is limited. It is very difficult to prove a substantive link between strategy formulation and business performance. In three out of the four applications a majority of members said that their performance had improved and major decisions were implemented. These positive indications fall short of proof that the SOLP process will lead to improved business performance.

10.5 Further Research

The work which has been carried out in this study could be usefully extended by the following further research:

1. Further Action Research with willing industrial partners is required to fully validate the SOLP process across a number of industries. The researcher believes it would be valuable to repeat the process in a number of industries which exhibit different types of customers and products, different types of manufacture, and a range of supply chain configurations. A possible constraint is the availability of sufficient external facilitators to work with all the companies in the labour-intensive manner argued to be required. If this constraint can be overcome, it should be possible to examine the interaction between the process and different industrial situations. The barriers to success in each industry, and the tailoring required to suit particular conditions, can both be studied in this way with the aim of defining any modifications which the SOLP process requires to be user-friendly and effective in each industry.

2. The manner in which the SOLP process is embedded into a company is an important piece of research which would build upon the findings obtained in this study. A single example has been observed at the Bradley meat processing company. Such a longitudinal study would aim to discover how the companies embedding SOLP accepted the process and how their strategic decision-making increased over time. Part of the procedure would involve training internal managers to facilitate the process, as has already been done at Bradley.

3. It is considered particularly valuable to carry out the SOLP process at meat processing companies with *all* members of the supply chain represented in the planning team. A major problem to be overcome is the representation of retail companies on the planning team where there is strong commercial rivalry between several retail-chain customers. This problem may be solved by research in another industry where commercial sensitivity is lower. The work carried out in this proposed research also needs to cover each link in the chain to a sufficient depth relative to their standing in the supply chain. Provided these two conditions are met, it is believed that an operationalised method of addressing Strategic Operations and Logistics Planning for integrated supply chains would result.

4. More work is needed on joint operations and logistics strategies for complete supply chains. The work carried out on such chain-wide strategies in this thesis must be regarded as preliminary. It is necessary to work with all the partners in a number of supply chains to complete the design and practical steps required to enable the whole supply chain to plan its operations and logistics in one process. This process will lay the foundation for competitive advantage which includes innovation, effectiveness and efficiency.

5. There has been little said in this thesis, or the literature, about the application of MAA/SOLP by small businesses. One area of further research is to examine how small business could benefit from the application of SOLP as part of an integrated supply chain.

10.6 Summary

A Strategic Operations and Logistics Planning process was developed, extended and tailored and then successfully applied in several meat processing companies. Support is necessary to provide worksheets, with individually adapted lists of order winning criteria and policy areas, and to provide external facilitation. Guidelines are proposed to assist companies to set up a strategic operations planning process and to choose a suitable facilitator. The process enables managers to formulate operations and logistics plans together.

A significant start was made in integrating logistics with operations across all the partners in a supply chain. The concepts required are enunciated and then applied, as far as the meatworks management permitted, twice in one meatworks. The applications widened the policy areas considered by SOLP and included a representative of a supply chain partner in the team. Whilst the results obtained are promising, this work requires further testing.

It is clear that improved strategic decisions were made by many team members at the meatworks. Findings demonstrate that strategic actions were engendered and that the process is successful in enabling the team to craft strategies for product families across the whole supply chain.

The methodology of Action Research is found to be very suitable for studying functional strategic planning processes. The privileged position obtained by the researcher who is permitted to facilitate such a process enables him or her to collect very rich information.

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Glossary and Abbreviations

Term Used	Meaning
Action Research (AR)	A type of applied social research in which the researcher has his or her own role in the process to be changed (Susman and Everard 1978).
Decision Areas	Policy Areas which contain actions.
Distribution Centre	A facility or warehouse where finished products are stored and then assembled into the quantities required by individual customers for delivery to them.
End consumer	The person or entity which consumes or uses the product.
Game Plan	Brief, meaningful name for SOLP process used in practical applications
Information flow	The sharing of electronic and other information between members of an integrated supply chain.
Integrated Supply Chain	A business system comprising all the links (physical and informational) required to achieve the whole chain of processes from raw material sources through manufacture until delivery to end consumer is accomplished. Similar to Porter's (1985) value chain.
Link	A part of a supply chain in which activities are carried out such as storage, transformation or movement.
Manufacturing Audit Approach (MAA)	Process of strategic operations planning developed by Platts and Gregory (1990) which was used as the foundation for the SOLP process.
Meatworks	Factory in which livestock is processed into meat products (abattoir) or in which meat products are further processed into manufactured or preserved smallgoods.
Operationalise	The act of designing a technique, such as strategic plan formulation, so that it may be easily and effectively used to produce a desired result.
Order Winning Criteria (OWC)	Competitive criteria or priorities which are given greater emphasis to increase the likelihood that orders will be obtained (Hill 1994).
Product-family-channel	The set of supply chain links through which information, materials and goods must pass for a particular group of products to be manufactured and distributed to customers. Also called product family or product channel.
Strategic Operations and Logistics Planning (SOLP)	A method of formulating future plans for the Operations and Logistics functions of manufacturing companies.

Term Used	Meaning
Supply chain	A collective term for partner enterprises which, by working together, satisfy the requirements of the end consumer. Such partners comprise suppliers, manufacturers, distributors and retailers and may be called 'links' (Mabert and Venkataramanan 1998).
Supply constellation	A group of enterprises using knowledge and resources to develop and producing products and services together to create value for themselves via delivery to customers.
Support	Assistance provided to teams of operations planners to make their task easier and increase the chance of success.
World Class	Discriptor used for a company with sufficient capabilities and resources to be able to compete with other enterprises in its industry from any part of the world.

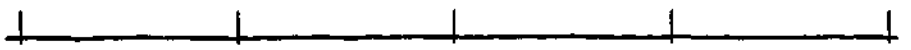
APPENDIX 1

PROCESS REVIEW QUESTIONS AT TRICO AND ENGINEERING WORKSHOPS

REVIEW QUESTIONS

Worksheet 1.1

1 How easy was it to fill in the Market Requirements worksheet?

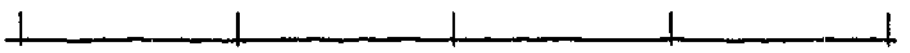


Hard Average Easy

2 What data had to be specially obtained for this sheet? _____

Worksheet 1.2

1 How easy was it to fill in the Achieved Performance worksheet?

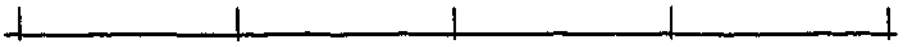


Hard Average Easy

2 Which areas were more difficult to assess? _____

Worksheet 1.3

1 Does this sheet tell you things about your strategy?

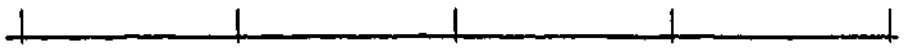


No Some Very helpful

2 What insight did you obtain from this sheet? _____

Worksheet 3

1 Was it possible to fill in this sheet?



Very difficult OK Easy

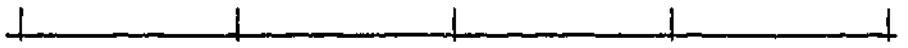
2 Are the answers in this sheet mainly? A. Subjective [ ]
(Tick one box) B. Objective [ ]

3 What data had to be specially obtained for this sheet? _____

4 Do any of the answers in this sheet surprise you? YES / NO
If 'YES", which? _____

Worksheet 6

1 How difficult was it to fill in this sheet?



Very difficult OK Easy

2 Did the answers in this sheet require? A. Thought [ ]
(Tick one or more boxes B. Talking to colleagues [ ]
and add a comment) C. Research [ ]
_____

3 What data had to be specially obtained for this sheet? _____

4 Do any of the answers in this sheet surprise you? YES / NO
If 'YES", which? _____

5 Does this sheet bring improved manufacturing policies to mind? YES / NO

Worksheet 7

You are now well on the way to defining your manufacturing strategy. Please take some time to tell us how much the Strategic Audit process helped you. Your comments in any areas, including the questions below, would be a great help to us.

1. Has the Strategic Audit helped you to understand the objectives and priorities of the Manufacturing Function? YES / NO. Comment _____

2. In what areas has the Audit been the most help? _____
. In what ways has it helped? _____

3. How could the Audit be improved? _____

4. Has the Strategic Audit been an efficient use of time? YES / NO
In what ways could it be streamlined? _____

5. Would you recommend the Audit to managers of another manufacturer? YES / NO
Why or why not? _____

6. What areas are missing from the Strategic Audit? _____

7. What else do you need before you can implement this Manifacturing Strategy?
a. As a Team _____
b. As Individuals _____

8. Would you like to go through this Audit again (without facilitators) ? YES / NO
Comment _____
If YES, when would you like to revise the Audit? _____

APPENDIX 2

WORKSHEETS USED IN SOLP AND EXTENDED SOLP

Worksheet 1.1

Initials: _____

Instructions Overleaf

Profile 1
Market Requirement

Product Family: _____

Reliability of delivery

-2 — 0 — +2

Not important — Essential

Features (Processing options)

Few — Many.

Quality (Attainment of specification)

Acceptable — Very High

Flexibility of Design (Specifications)

Standard only — All products customised

Response to variation in volume

Volume variations low — Volume variations high

Price

Price dominant — Price not dominant

Delivery leadtime

Ex-stock — 24 hour — Not significant

Worksheet 1.2

Initials: _____

Profile 2
Achieved Performance

Instructions Overleaf

Product Family: _____

Reliability of delivery

-2 0 +2

Not important — Essential

Features (Processing options)

Few — Many.

Quality (Attainment of specification)

Acceptable — Very High

Flexibility of Design (Specifications)

Standard only — All products customised

Response to variation in volume

Volume variations low — Volume variations high

Cost

High — Low

Delivery leadtime significant

Ex-stock — 24 hour — Not

Other

Worksheet 1.1and 1.2 - Profile **Initials:**

Market Requirement ×_____×

Achieved Performance O - - - - - - - O

Product Family:

Reliability of delivery

-2 0 +2

Not important — Essential

Features (Processing options)

Few — Many.

Quality (Attainment of specification)

Acceptable — Very High

Flexibility of Design (Specifications)

Standard only — All products customised

Response to variation in volume

Volume variations low — Volume variations high

Price/ Cost

Price dominant — Price not dominant

Delivery leadtime significant

Ex-stock — 24 hour — Not

Packaging

Not important — Important

Food Safety

Not significant — Significant/Achieved

Shelf Life

Not important — Important

WORKSHEET 2

Team Sheet
Instructions Overleaf

BASIC PRODUCT FAMILY MARKET DATA

Product Family	Sales as % of total sales	Contribu-tion as % of total	Market share or number of competitors	Growth / Vulnerabil-ity -2 to +2	Market growth / Stage of life cycle

INSTRUCTIONS

This worksheet is designed to record basic information for each product family.

1. List each product down the left-hand column
2. For each family enter the following information:

Sales. The percentage of total sales revenue attributable to the family.

Contribution. The percentage of total contribution attributable to the family (Contribution is net sales revenue after variable costs have been deducted).

Market Share. If the actual value of market share is not known, a ranking relative to competitors should be used.

Growth measures. It is sufficient to assess growth of your sales and the market subjectively using the following five-point scale:

-2	-1	0	+1	+2
Declining rapidly	Declining	Static	Growing	Growing rapidly

WORKSHEET 3

Initials: _____
Instructions Overleaf

Order Winners

Competitive Factors	**Product/ Channel Family**						
	Fresh Saus-age	Franks Bulk	Franks Packag -ed	Hams Cooked meats	Bacon	Shingle Meats, Tubs	Soft Lines
Reliability of delivery							
Features (proc -essing options)							
Quality (attain -ment of spec'n)							
Flexibility of design (spec'ns)							
Response to variation in volume							
Price /Cost							
Packaging							
Food Safety							
Shelf Life							

Distinctive Competencies .....
.....,
.....

WORKSHEET 3 Order Winners

INSTRUCTIONS

This worksheet is used to identify the competitive edge for each product line.

1. Across the top enter each of the product lines which you produce.

2. For any factor which is essential to be in the market, enter Q, for qualifier: if you don't attain these factors, you won't even be considered for orders.

3. For each product family, you now identify which are the most important factors in winning orders. You have 100 points to allocate for each family, give the most to the most important factors. Resist the temptation to enter points into every box.

WORKSHEET 4 **Initials:_____**

Current Operations Performance Instructions overleaf

Product Family	Fresh Sausage	Franks Bulk	Franks Packaged	Hams	Bacon
Reliability of delivery					
Features (options)					
Quality to spec'n.					
Flexibility of design					
Response to variation in volume					
Price / Cost					
Packaging					
Food Safety					
Shelf Life					
Performance Measures*					
1. Example					
2. Example					
3. Example					

* These are measures of smallgoods manufacturing performance necessary to attain customer requirements.

WORKSHEET 4

INSTRUCTIONS
This worksheet identifies what performance you are achieving on the order winners identified in Worksheet 3. Concentrate on the most important criteria.

For each of the main product families, assess how well you are currently performing on each criterion.

Rate yourself on the following scale:

-2	0	+2
Performance gives strong *disadvantage to Operations.*		Performance gives strong *advantage to Operations.*

WORKSHEET 6

Initials:_____
Instructions overleaf

Assessing the Current Operations Strategy
Product Family _____

Policy Area	Current	Order Winners				
	Practise	Reliability of delivery	Features (options)	Quality - attain spec.	Flexibility of design	Response to vol. cha...
Facilities (Works)						
Capacity						
Vertical Integration						
Processes & Technology						
Human Resources						
Quality						
Control Policies						
Producers						
Distribution						
New Product						

WORKSHEET 6 INSTRUCTIONS

1) Consider each of the operations policy areas in turn.

2) For each area identify the current practise – what is your current policy in this area?

3) Assess to what extent this practice supports manufacturing in the achievement of good performance on each
competitive criterion, using the ranking below:

Note: Not all policy areas will affect each criterion. Combinations that are unimportant should be omitted.

-2	0	+2
Policy is very bad for competitive performance	Policy has little effect	Policy provides strong support for competitive performance

4) Underlying reasons for current poor performance may be shown in particular cells if desired.

5) You must complete important Order Winners for key policy areas for that product family. You do **not** need to fill in every box.

WORKSHEET 6 Explanation of Policy Areas

Facilities: The location of your factory in relation to suppliers and customers. The location of various processes within the factory to suit different product families.

Capacity: What level of capacity do you currently have of output that can be available? What level of output can be achieved in a normal working week from the plant, equipment and employees available?

Vertical Integration (Span of supply chain): Does your works cover the right range of processes in the chain from livestock production to meat consumption? Should you be more backward integrated towards the piggery? Should you be more forward integrated towards the consumer?

Processes (and Technology): Are your processes positioned at the right point, on the scale from individual production to continuous line flow, to suit the needs of your markets? Is there an advantage in focussing the factory, or part of it, on a single product family? Are the technologies of your process at the right level to support sales?

Human Resources: This area examines the availability and motivation of employees. Is your organisation structure appropriate to your business? Does it enable good communication between functions? Do you know what skills are required and are you providing training for employees to acquire them? Are people encouraged to give their best through information sharing, team working and involvement in decisions?

Control Policy decisions: Controlling the flow of meat through the factory involves planning, scheduling and expediting it relative to orders throughout the system. Consider whether your scheduling incorporates the right priorities, responsiveness and system for linking sales orders to meat supply.

Suppliers: Consider whether your relationships with raw material suppliers are based on competition or cooperation. Should you work more closely with suppliers to gain the benefits of their expertise? Do you have procedures for selecting and evaluating new suppliers against suitable performance measures? Are effective measures in place for auditing the supply of meat and other materials?

Distribution: Does the distribution of your products to customers meet their requirements? Are your product parameters correct at load out? Does your transport deliver product according to customer needs?

New products: Review your ability to innovate and introduce new smallgoods. Is it possible to change your manufacturing quickly to produce new products?

Other: Are there other policy areas which are important to the support which meat processing can give to meeting customer requirements?

WORKSHEET 7

Initials:_____

Strategy derivation worksheet.

Product Family:_____ Priorities:_____

Operations Policy	Weakness / Required Strength	Possible actions / Strategic choices
Facilities (Works)		
Capacity		
Vertical Integratio.. (Supply Channel)		
Processes & Technology		
Human Resources		
Quality (conform to customer needs)		
Control Policies		
Suppliers (Piggery, Abattoir,Boning,etc.)		
Distribution		
New Product		
Other		

WORKSHEET 7 Strategy derivation worksheet

INSTRUCTIONS

This worksheet identifies the policy areas which need amendment and identifies possible strategic choices.

1) Take each family in turn, starting with the most important ones.

2) Identify the main priorities, where performance is not achieving the customer requirements for competitive success (i.e. where there is a mismatch).

3) For the main policy areas which contribute to this mismatch, identify the specific weaknesses.

4) Identify possible actions / strategic choices to remedy this weakness.

WORKSHEET 8

Initials: _____

ACTION PLAN

Product Family _____

Policy Area	Year 1				Year 2		Year 3	Year 4
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Jan-Jun	Jul-Dec		
Facilities (Meatworks								
Capacity								
Vertical Integration								
Processes & Technology								
Human Resources								
Quality								
Control Policies								
Suppliers (P,A,B)								
Distribution								
NewProduct introduction								
Other								

Instructions for Worksheet 8

The Action Plan enables you to set out the specific projects, training, capital expenditure, etc. which you require to achieve your Operations / Logistics. The Actions are set against a timescale so that their order can be defined.

NOTES:

1. Separate Action Plans for separate product families are required.

2. It is useful to put down an Action Plan whilst the strategy is fresh in your mind.

3. This Plan can be used to monitor whether progress with implementing the strategy is proceeding at the right rate.

APPENDIX 3

INTERVIEW QUESTIONS IN MEATWORKS

These questions were used at Flock, Wilson and Bradley meatworks. The questions given refer to Bradley, but the other names were substituted, as appropriate.

STRATEGIC ACTIONS BY BRADLEY'S MANAGERS

Do your actions move Bradman towards its future goals by strategic changes or tactical decisions or do they concern the day by day running of the company? Please read the definitions and then answer the questions below.

We define three kinds of actions:

A *Strategic* decision points the direction of the company in the future, by permanently committing many resources for a long period to achieve an important outcome.

e.g. decision to equip a new packaging process; decision to attain HACCP certification.

A *Tactical* action is also intended to change the company but through short duration actions which 'fill - out' the overall strategy in some particular area.

e.g. training employees in the methods of quality assurance;
involvement in external body overviewing new guidelines for the food industry.

Running decisions are the huge number of decisions taken each day by each manager to keep the company running properly in its current direction.

e.g. purchase of meats; allocation of fitters to equipment; supervision of process workers.

1. What proportion of your time do you spend on Running, Tactical and Strategic decisions?

	Proportion - %
Running Tactical Strategic	

2. Give examples of each type of action which you carried out in the last week?

Type	Example
Running	
Tactical	
Strategic	

3. Select the 2 or 3 policy areas in which you have the most involvement from the following list. For each area indicate what strategic decisions are current.

Facilities	Quality	Capacity	Control policies
Vertical integration		Meat supply	
Processes		New products	Human resources

Current decision:

-
-
-

4. Are any decisions currently in the "too hard basket"?

-
-

5. Does anything/ anyone impair your ability to make strategic or tactical decisions ?

6.Do you aspire to an increased role in strategic decisions for Bradleys? _____

7.In what way can you contribute further?

---

8. What contacts with outside organisations do you have?

Organisation	Position	Frequency

9. If you have some outside contacts, how close are they?

_____

10. Bearing in mind smallgoods are produced for customers and they rely on meat from a piggery, killed and boned by supplier organisations, what extra contacts do you think you should have?

_____

11. In the future, what coordination with suppliers and customers would you like to see?

_____

Please think about the strategic planning meetings that were held.

12. What areas of the work done were helpful?

-
-

13. What areas covered were not helpful ?

-
-

14. What should the facilitator have done to improve meetings?

_____

15. Has the strategic planning improved your performance? YES / NO / UNSURE

How do you know this? _____

16. Is a difficult trade situation making it harder to plan at the moment?

_____

17. Would you be interested in personal development in strategic management? (Such as strategic thinking in your own area of responsibilities) YES / NO
What do you wish to be addressed ? _____

18. Would you like to make any other comments about strategic planning for Bradleys?

_____

APPENDIX 4

INTERVIEW RESPONSES AT MEATWORKS

Flock Interview Responses - Before SOLP

For Managers' positions, see key below responses.

Manager	1.Time proportion			2. Examples			3. Policy Areas List						
	Run	Tact -ical	Strat -egic	Run	Tactical	Strategic	Facil -ities	Capac -ity	Span	Proc -ess	HR	Qual. Cont.	Control Policy
1	48	47	5	System amendments	Develop training curriculum	Export via ISO 9000	No	No	Yes	Yes	Yes	Yes	Yes
2	85	15	0	Movement of prices	Buy Ox from NSW	None	Yes	Yes	No	No	No	Yes	Yes
3	85	8	7	Selling prices	Hide Selling	Partner with farmers	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	85	10	5	IR such as reimburse	Sales/purch. by stock type	Distribution system	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	60	30	10	Routine maintenance	Multiskilled training	New boning amenities	Yes	No	No	No	Yes	No	Yes
6	80	20	0	Pay contractors	Flocklink' scatter diagram	-	Yes	No	No	No	Yes	No	Yes
7	85	10	5	Purchase manuf. meats	Develop new product	Consider Export inquiry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average	75	20	5										
Average without 1	80	15.5	4.5										

Manager	3.Policy Areas		4	5	6	7
	Supp -ly	New Prod.	Too Hard?	Impair?	Incr. Strategic Role	Contribute further
1	No	Yes	Boning room facilities	No	Yes, direction	Lead company into export
2	Yes	Yes	No	Yes, workload	Yes	More involve in decisions
3	Yes	Yes	Yes	Yes, bank manager	not applicable (n.a.)	n.a.
4	Yes	Yes	Company goal set	Information, fire fighting	No where to go	Solve 4&5
5	No	No	Complete prevent. maint	Time to research	Not really,recent promote	Better understand meat business
6	No	No	Change computers	Patriarchal company	Yes	Increase role in formulate policy
7	Yes	Yes	Major expenditure	Financial approval	Yes	Further policy develop at Challenge

Key to Managers' positions

1 Quality Assurance Manager
2 Livestock & Sales Manager
3 Managing Director
4 General Manager
5 Engineer
6 Financial Controller
7 Smallgoods Company Manager

Flock Interview Responses - After SOLP

For Managers' positions, see key below responses.

Manager	1.Time proport'n Run	Tact -ical	Strat -egic	Question 2. Examples Run	Tactical	Strategic	Q 3. Policy Areas 1	2	3	3a. Current Decision 1
1	15	80	5	Buy laboratory equip.	Work on quality system	Develop a laboratory	Quality	Control	HR	Establish quality system
2	No response			Determine tally	No responsibility	-	Vert. Integ	Control	Supply live	-
3	80	13	7	Setting prices	Meet consultative comm	Plans for boning room	Vert. Integ	Processes	Supply live	Alliance with farmers
4	90	5	5	Manning the chain	Train men on computer	Extend smallgoods co.	HR	New prods		Enterprise agreement
5	85	12	3	Start up, breakdowns	Plan weekend mainten.	Improved automation	HR	Processes	Facilites	Reduce conflict
6	82	15	3	Tax return	Grids for purchasing	Herdlink documentation	Facilities	Control	Supply live	Implementation Flocklink
7	80	18	2	Purchasing, sales	Approve training prog.	Equipt locate in extentionn	Facilities	New prods	Control Pol	Building Extention
Average	72	24	4							

Manager	3a. Current Decision 2	3	Q 4 Too Hard?	Q 5 Impair?	Q 6. Achieved by SOLP process General	Better str mgt?
1	Policy meet cust.	HR Structured training	No	No assertive	MD more aware of need for carton beef	
2	-		Yes,box beef	Reporting to Frank	Too much MD leads	No
3	New chilling fac.	Hide puller & bone pro	No	Fincl constraints	Cross pollinate mgrs	Don't know
4	Boning beef, etc.		Not really	Lk.Consumer rese	Set plans in place	Jump between areas
5	-		Yes new boning room	Money availability	Enlightened way people think	
6	New buildings		Boning	Lack of time, alloc	Communication	No
7	Chicken product	Train staff for new pro	Yes,factory l'out	Econ.sit'n, caution	More aware decns	Not seen any decisions

Key to Managers' positions

1 Quality Assurance Manager
2 Livestock & Sales Manager
3 Managing Director
4 General Manager
5 Engineer
6 Financial Controller
7 Smallgoods Company Manager

Flock Interview Responses - After SOLP (contd.)

Manager	Q 6. Achieved by SOLP process		Q 7 Improve	Q 8 Most important	9. What is being done?	
	Closer to team	Actions taken	Flock	Business Area	a. by you	b.by others
1		-	Establish correct roles	Export, boning meat	Establish Q.Control	Not much. MD tries
2		Not allowed to	Move to boxed beef	Boxed beef	-	
3	No,already close	Boning room develop.	Plan & coord business	Supply & sell allian.	Produce communc'ns.	Flock link to livestock
4		-	Research to Achieve V/A	Get closer to cust.	Not much	Not much
5	Yes,discus.helps	-	Expand sales areas,expo	Look after customer	Not enough R&D	Need smallgoods R&D
6	Yes	Delegate to free time	Decide future direction	Portion control sales	Nothing	Nothing
7	Yes	Not himself	Better cust. Relns, R&D	Boning & portn cntl	Not applicable	A little work by MD

Manager	10	11 Still		12 Helpful SOLP areas	
	Inhibitors	Too hard	Happen	1	2
1	People fear change	No - Boning specifcat'ns	Prepare spec. manual	Insight into other minds	Verfied needfor other proc
2	Lack of job description	No, none	-	Know strategic plan	Facilitator ask questions
3	Yes slow farm change	N/A	-	Group communcations	Time to sit & think
4	Manager to collect data	No	Alternate duties for injured	Discuss without interruption	How appraise product line
5	Need right person for R&D	Yes, Computer for maint.	Few quotes, no money	Feel how company operates	U'stand how others think
6	No	Yes, hardware	Addressing software	Group focus on future	Communicate as equals
7	Extra manager needed	Yes	Smallgoods decision	How strategic plan works	Learn method of SOLP

Flock Interview Responses - After SOLP (contd.)

Manager	Q 12 Helpful SOLP areas 3	Q 13 Not Helpful areas 1	2	Q 14 How improve meetings	Q 15 Improved perform	How know?
1	Export or downsize	None, another view	Focus on plan, prep	OK, more focus	Unsure	
2	-	"Not the way it was put together		-	No	-
3	Results, hopefully	Minds wandering	Organisation poor	More energy, excite	Yes	Interest from others
4	Whole group work best	Lack def'n of factors	Sessions too long	Keep group together	No	-
5	Facilitators were very good	Use indust'y termin		Language used	Unsure	Visualize,not on paper
6	-	Definitions,use blks	Too much preamble	-	Yes	I'm thinking different plane
7	-	No, was quite good		Nothing, ban mobiles	Unsure	Makes me aware of co.

Manager	Q 16 Hard to plan now?	Q 17 Interest in personal development	What addressed	Q 18 Other comments
1	Yes,export meat on domestic			
2	No, red tape must be cut	Yes	Involve whole dept.	Review in 12 months to see progress
3	Yes	Yes	Each mgr. organ own area	Ownership of plan to come from managers
4	Yes,harder to punt	Yes	Easier involve in plans	Plan to become normal part of management
5	Yes, financial situation	No	Commit more team time	Find the major goal, rest is easy
6	No, harder 18 months ago	Yes	Fully developed dept.plan	Lets continue,plan for 10 years in future
7	Rather economy & finance	Yes	Management restructure	People need to see reading & planning as work
		Yes	Develop the 'Why's' of plan	Pursue & develop building on meetings held

Wilsons SOLP Interviews - Before SOLP

For Managers' positions, see key below responses.

Manager	1.Time proportion			Q 2. Examples			Q 3. Policy Areas			Q 3a. Current Decision
	Run	Tactical	Strategic	Run	Tactical	Strategic	1	2	3	1
1	65	25	10	Set up lamb kill	Liaise with Ian S.	Develop brand strategy	HR	Capacity	New Prod	Change pay structure
2	45	35	20	Catching up on stock	In house training	Co.management roles	Control	L'stock	HR	Appoint new foreman
3	0	30	70	-	Monitor cash flow	Budgeting & negociate	Control	Reporting		Monthly mgt meetings
4	10	80	10	Staff attendance	Release of funds	Update computers	Control	HR	Processes	Delegate to new staff
5	90	10	0	Assess monitoring	Write QA manual	-	Quality	Processes		Change manual to ISO
6	85	10	5	On floor inspection	Train opers.in QA	Not now strategic	Control	Quality	HR	Promote QA
7	no response									
8	92	8	0	Allocate work	Train packers	-	Processes	HR		Train packers
Average	55.3	28.3	16.4							
Average excl. 3	64.5	28	7.5							

Manager	Q 3a. Current Decision		Q 4	Q 5	Q 6 Increased	Q 7 Contribute further
	2	3	Too Hard?	Impair?	strategic role?	
1	Change kill capacity	Develop control point	New offices	Capital	Yes	Organising Human resources
2	Possible shrinking supply	New buyer for runner	Withdraw supply	Constraint is finance	No	Improvement in leadership
3	Weekly production report		Capital to expand	Funding, thin mgt.	Already full role	Benchmarking, from SOLP
4	Team effort- motivation	Reduce worker hours	Yes,to sack worker	Negative attitude	Yes, more studies	Attend more training sessions
5	Qual.implicate - processes		No	No problems	Yes,know lots areas	Use my experiences
6	Aim tail tag trace		Tail tag trace	Cannot leave kill floor	Yes over next year	Promotion of meat quality
7						
8			No	No	Happy,more long term	More responsibily perhaps

Key to Managers' positions

1 Sales & Marketing Director
2 Operations Director
3 Financial Consultant
4 Office Manager
5 Quality Officer (1)
6 Quality Officer (2)
7Sales Manager
8 Boning room supervisor

Wilsons Interview Responses - After SOLP

For Managers' positions, see key below responses.

Manager	1.Time proportion			Q 2. Examples			Q 3. Policy Areas			3a. Current Decision
	Run	Tactical	Strategic	Run	Tactical	Strategic	1	2	3	1
1	80	10	10	Ring butcher for order	Chair Table Rite	Write to supermarkets	Control P	New products		Dual kill floor system
2	70	15	15	Discuss throughput	QA meeting	Attend conference	Facilities	Processes	HR	Extend boning room
3	not applicable			n/a			Facilities	Capacity	Cont.P.	Expand chiller capac.
4	70	25	5	Admin decisions	Interview new staff	Graph quality perform	Control P	HR		New staff member
5	85	7	8	Works quality assess	Visit Melb re train	Install quick freeze	Quality	Capacity		Train up slaughtermen
6	70	30	0	Arrange people	Check income stock	Consider development	Quality	Processes	HR	Upskilling crews
7	85	10	5	Sale prices	Expand sales market	Customer alliance	Control P	New prod.	HR	Taking daily orders
8	90	10	0	Supervise meat proces	Review people's work	-	Control P	Processes	HR	How meat processed
Average	79	15	6							

Manager	Q 3a. Current Decision		4	5	6. Achieved by MS process	
	2	3	Too Hard?	Impair?	General	Better str mgt?
1	Racks of Lamb		Yes,build offices	Finance mainly	Long term strategy	Yes
2	Improve chill of boxed beef	Retrain lamb kill proc.	Ch.calf dress proced	Cost of capital works	Ind'y leader in Brande	Don't know
3	Contract out freighting	Computerise accts	If need funds	Finance shortage	Substantial growth	Reasonably
4	Install new computer		-	Share staff	Obtain new PC 4 HCC	-
5	Capacity in Chilling		Yes, extra chillers	Lack of capital	Idea of plan,specific ite	Know dir'n
6	Attain ISO in 6 months	Change dress method	Facilities not adeq.	Cope with absenteeism	More insight into strate	No
7	Racks of lamb	Directing drivers	Not applic.	Market price fluctuate	Clearer picture of co. c	Yes
8	Liaison with processing		Replace borderline stal	-	No, too limiteed involvemant	

Key to Managers' positions

1 Sales & Marketing Director
2 Operations Director
3 Financial Consultant
4 Office Manager
5 Quality Officer (1)
6 Quality Officer (2)
7Sales Manager
8 Boning room supervisor

Wilsons Interview Responses - After SOLP (contd.)

For Managers' positions, see key below responses.

Manager	6. Achieved by SOLP process		7	8	9. What is being done?	
	Closer to team	Actions taken	Improve Wilsons	Most imp. Bus. Area	a. by you	b. by others
1	Yes	Yes, more boxed meat	Revisit our 5 year plan	Develop boxed meat	Getting more sales	Delivering to specification
2	Yes	Added resp. to mgt. Team	More consist. product	Reputation as reliable	Customer feedback	Get them see cust. view
3	Yes	Yes	Marketing & disribut'n	Boning Room	Cost controls	Operating controls
4	-	Obtain new PC 4 HCCP	More communication	Steady incr. in volume	Help in admin.	Full on mkting & sourcing
5	Yes	-	Training is paramount	Contract kill	Help with Cryovac	Directors chasing business
6	Little bit	No, makes tolerant of sales	Get outside people	Promotions & sales	Nil	Not known
7	Yes	Yes	Mkting emphes. Qual.	Sales & promotion	Sales	Promotional & qual.buying
8	-	-	More boning volume	Sales	High stand. into box	Staff work on sales

Manager	10	11 Still	12 Helpful SOLP areas		
	Inhibitors	Too hard Happen	1	2	3
1	Space in chilling	Yes,fridg Closer due profits	Look at overall picture	Working in groups	
2	Lackstaff resource	-	People look wider	Helped team philosophy	
3	Finance again	-	Networking key operators		
4	Funding	-	Suppose clearer look at big picture		
5	Boning capacity	-	Future direction	Bring all key personnel together	
6	n/a	-	All saw wider area	Not only part of plant	Worksheets & open discuss
7	No	No -	-		
8	-	-	-		

Key to Managers' positions

1 Sales & Marketing Director
2 Operations Director
3 Financial Consultant
4 Office Manager
5 Quality Officer (1)
6 Quality Officer (2)
7Sales Manager
8 Boning room supervisor

Wilsons Interview Responses - After SOLP (contd.)

Manager	13 Not Helpful areas 1	2	14 How improve meetings	15 Improve perform?	How know?	16 Hard to plan now?
1	Less worksheets	Too structured, hard to change	More flexible worksheets	Unsure	-	Yes
2	Follow thro' products not practical		More consistent attendance	Unsure	-	Has been, improve
3	Perceive complex	Time constr.s of team	Not much else could be done	Staff handle volume		Yes
4	"No magic money tree"		Facilitator good, our time was limited	Yes	See whole works	Yes
5	Prod.groups slow	Plan whole busines together	Facilitator understand industry more	Yes	Relate better	Adapt plan as you go
6	Methodology	3 weeks to get one decision	No idea	Yes	Look at products	No, not my job
7	-		-	Unsure	Not attend enough	-
8	Found a bit hard, strange		-	-		No

Manager	17 Interest in develop?	What addressed	18 Other comments
1	Yes	Delegation	-
2	No	Not at this point	Some of processes not relevant for our plant
3	-		Wilson meats will incr. Mkt share in future
4	No	-	-
5	Yes	Need to be trained	Get key personnel involved, told too little
6	Yes	W'place develop	Worth continuing, sorry we stopped.
7	Yes	-	Planning should includeall levels of mgt.
8		Happy where he is	More involve by him needed before put more in

Bradley Interview Responses - Before SOLP

For Managers' positions, see key below responses.

Manager	Q 1.Time proportion			Q 2. Examples			Q 3. Policy Areas			3a. Current Decision
	Run	Tactical	Strategic	Run	Tactical	Strategic	1	2	3	1
1	5	60	35	Review credit returns	Set up work teams	Driving HACCP plans	H.R	Vert Integ.	New Prod.	Restructure logistics
2	10	20	70	Sample preparation	Labelling & training	Develop new products	New Prod.	Process	H.R.	Low salt products
3	80	18	2	Sv process workers	Review cap.Investment	Plan future capital exp	Quality	HR	-	Too new to comment
4	90	5	5	Purchasing meat	-	-	Meat Sup.	Quality	-	Increase pigs
5	50	30	20	Trials on fat in pigs	Write MSQA manuals	Build boning complex	Quality	Control P.	Facilities	Quality & size of pigs
6	85	5	10	Organise new material	n/a	Modify pig matrix	Quality	Meat Supply		-
7	40	50	10	Release staff for train	Run OHS training	Food Safety Plans	Control P.	HR	Quality	Develop of HACCP
8	Not received									
9	40	50	10	Ordering goods	Training SOPs	Project work for capex	Processes	New Prod.	-	Process improvement
10	10	20	70	Delegate tasks	Train liaison officer	Haccp desk top audit	Control P.	Quality	-	Develop of HACCP
11	Not received									
12	Not available									
Average	45.6	28.7	25.8							

Key to Managers' positions

1 Operations Manager
2 Product Development Manager
3 Packaging Manager
4 Meat Purchasing Manager
5 General Manager, Boning
6 Deputy Purchasing Manager
7 Organisation Development Manager
8 Works Engineer
9 Process Development Manager
10 Quality Manager
11 Production Manager
12 Logistics Manager

Bradley Interview Responses - Before SOLP (contd.)

Manager	3a. Current Decision 2	3	Q 4 Too Hard?	Q 5 Impair?	6. Increase role?	Q 7 Contribute
1	Relations with BMI	Write briefs for new product	No	Yes, opers. vs sales.	Yes,beGM.	Focus on change, not fire fight
2	New bacon proces:	Pakaging training	No	Lack of clear objective	Yes.	By understanding consumers
3			No	No	Yes	Ability to practicalise visions
4	Purchase Xmas hams		-	Yes,mgt.decision revie	Yes	External industry knowledge
5	Control policies	Upgrade refrigeration	No	No	Yes	Supply, Export sales, process
6	-		-	Decisions on the run	Yes	Technical
7	HR training priorities		No	Yes, lack consensus	Yes	-
8	Not received					
9	New Process implement		-	No	Yes	-
10	Quality system	Intro. of measurement system	No	Yes, varied goals	No	Mainly systems plan & implement
11	Not received					
12	Not available					

Manager	Q 8. Outside contacts 1	2	3	Q 9 How close	10. Extra contacts	Q 11 Coordination
1	Top 5 suppliers	Bunge Meat Industries	Distrib. Franchisers	Very, professional	With retailers	More wi HR, Qual, Logis
2	Many			working	With own sales/mk	Visit customers re needs
3	Supply companies			Quite	Not enough info.	Significant contact & coord.
4	Oakdale Meats	Pacifics Meats	Try Meats	Reasonable	Should have many	Close
5	Pork Meat Co.	Polar Cold Store	Meat Operators	Good working	cont. for fresh pork	Open relate to suppliers
6	Pork Meat Co.	Hurstbridge Abbattoir		-	Customer/sales	-
7	Quality service provider			Similar	other smallgoods	Close contact
8						
9	Many-previous pos'n			Used only occasional	-	Quality systems
10	suppliers	Customers	Govt. departments	Some close/some dist	Nil	Improved know. of product use
11						
12						

Bradley Interview Responses - After SOLP **First Process**

For Managers' positions, see key below responses.

Manager	Q1.Time proportion			Q2. Examples			3. Policy Areas		
	Run	Tactical	Strategic	Run	Tactical	Strategic	1	2	3
1	20	50	30	Approve w'house staff	Decide HACCP audit	Audit project profit	Meat supply	Human R.	
2	80	15	5	Produce new products	Samples for Mkt. launch	Launch new product	Quality	New Prod.	Processes
3	80	15	5	Allocate packing labour	Review recent injuries	Review extra slicer	Capacity	Quality	
4	40	30	30	Purchase meat	Change recipes to meat	Alternative meat supplies	Quality	Meat supply	
5	50	25	25	Maintain refrigeration	Consistent pig quality	Building new DC	Quality	Meat supply	Facilities
6	60	20	20	Supervision of operators	Change inspect'n focus	Change pig purch.matrix	Quality	Meat supply	Contr Pol.
7	40	30	30	Pay accounts for training	Training employees	Develop safety strategy	Quality	Human R.	Contr Pol.
8	30	50	20	Major repair decisions	Raising capex proposals	Prepare capital exp.	Facilities	Processes	Capacity
9	20	60	20	Meat prep. when b'down	Train staff	Future equipment	Processes	New Prod.	Capacity
10	10	70	20	Customer communcate	HACCP plans	-	Quality	Human R.	
11	not answered			Move workers to area	Train people	Plan for separate meats	Capacity	Control Pol.	Human R.
12	25	25	50	Direct reports activities	Training employees	Transport centralisation	Control Pol.	Capacity	Vert. Integ.
Average	41.4	35.5	23.2						

Key to Managers' positions

1 Operations Manager
2 Product Development Manag
3 Packaging Manager
4 Meat Purchasing Manager
5 General Manager, Boning
6 Deputy Purchasing Manager
7 Organisation Development Manager
8 Works Engineer
9 Process Development Manager
10 Quality Manager
11 Production Manager
12 Logistics Manager

Bradley Interview Responses - After SOLP (contd.) **First Process**

Manager	Q3a. Current Decision 1	2	3	Q4 Too Hard?	Q5 Impair?	6. Achieved by process General
1	Matrix for ext.meat supply	Implement new operations structure		No	Forced Integ	Understand resources
2	HACCP formulation	Light ham products	Improve Bacon process	No	Resonable	Present strategic direct'n.
3	Purchase new pack line	Set up teams		No	Not now	U/standpeople dynamics
4	Change pig grid	Stock receipt inspect	Increase yield from pigs	Upgrade classifications	Politics	Introduced new grid
5	Supply best raw matl.	Upgrade refridge equipt.	Consistent pig supplies	No	No	-
6	Increase quality of pork	Purch more carcasses	HACCP control	-	N/A	Direction, vision & focus
7	Develop HACCP plans	Process control doct.	Workplace trainer project	No	Need peers	Devt of a team approach
8	MAP packaging	Distribution warehouse		-	Clear directic	Tangible outcomes
9	Decide new equipment	Look at new casings	HACCP on processes	No	No	Product pasturise accep
10	HACCP implementation	Review dept. activities		Yes, Operating procs."	No	-
11	More capacity for Meat	Separate fresh meats	Train existing people	No, discuss with 'boss'	No	Inter-dept u/stand probs
12	-			No	You can't do'	Worked closer with mgt.

Manager	Q6. Achieved by process (contd.) Better str mgt?	Closer?	Actions taken	Q7 Improve Dons	Q8 Most imp. bus. Area	Q9. What is being done? a. by you	b. by others
1	tb determined	Yes	Yes	Integrate sales& ops.	Common dirn & change	Restructure Operations	Support ch'g
2	Options presented	Yes	No	Fully develop plans	Focus on fwd. Plans	Support sales	?
3	-	Better working relationship		Reduce faction separate	Customer service	Quality refinements	As above
4	Yes	Yes	-	Sales & Marketing	Machinery & marketing	Suggest sausage m/c	Mkt.progress
5	-	Yes	Yes	Upgrade pigs & equipt.	Pigs and sales	Supply best raw material	-
6	Yes	Yes	Too early	Direction	Food service	Improved specifications	HACCP sys.
7	Yes	Yes	Not yet	Devt of 'one team' culture	Sales& ops work together	Forum for discussion	-
8	Yes	Yes	No	Clear strategic direction	Packaging formats	Equipment for Package	Food safety
9	-	Involved	-	Marketing is required	Make ready meals	When directed	New HR
10	Too early	No	No	Improv communication	Sales &Marketing	HACCP development	Restruc.sales
11	-	-	Organise ham	Understand cust. needs	Extend the brand	Consist qual. Products	More persist
12	Yes, but time tells	Slightly	No, logistic action later	Management restructure	Info. Technology is power	Full proposal been put	-

Bradley Interview Responses - After SOLP (contd.) **First Process**

Manager	Q10 Inhibitors	Q11 Still Too hard	Happen	Q12 New outside contacts	Q13 How contacts improve	Q14 Supply CM import.	Why?
1	Uncertain owner	No	N/A	Delis. National buyers	Understand consumers	Yes	Consistent integration
2	Lack of programs	Yes	Nothing	Packaging organisations	Yes'	Yes	Provide Options for pack
3	Lack of forecasts	No	-	Packaging organisations	Outside input impr. qual.	Yes	All need to get feedback
4	-	Yes	Nothing	BMI Corowa, Boning roon	Keep abreast industry	Yes	They pay the wages
5	-	-	-	-	-	Yes	Consistent Quality
6	-	No	-	Suppliers of meat	Better industry overview	Yes	All work or same cause
7	People not on board			Customers as required	Yes'	Yes	Updated information
8	Not know customer needs			Equipment suppliers	Get latest tech. options	Yes	To know requirements
9	Lack of support	-	N/A	Only special projects	Select right outside help	Yes	Suppliers using HACCP
10	No	-		Quality certify bodies	New ideas, non-Bradley	Yes	Suppliers for materials
11	Lack sales people	-		Boning room	Closer S.Chain members	Yes	Casing supplier
12	Yes,sale of busin.	No	-	Consultants	Refocus energy on core	Yes	SCM contacts critical

Manager	Q15 Helpful SOLP areas 1	2	3	Q16 Not Helpful areas 1	2	17 How improve meetings
1	Product categories	Better approach to SOLP		N/A		Reinforce process
2	Vent obstacles	Institute directed programs	Discuss alternatives	Preamble obscure	Use of OWC	1 product at a time
3	Plan session	Future direction from G.M.		Lack of statistical base for compare		Was OK
4	Communication	People involved with whole product		-		Was OK
5	Product areas	Look individual products	Plans by group	-		-
6	Analysing strength	U/standing customer needs		-		-
7	Constructive discussion			Lack of sales/ mkt support		Set tighter deadlines
8	Evaluate perform.	Process to develop strategy	Action plan	Little rushed	Poor contin.	Discussion lost focus
9	Presentations	Plans confirmed by boss	Worksheets	Process occasionally slow		Less obstacles to progres
10	OWC give focus	Worksheets give continuity		-		Too quick, no hard data
11	Have cust. there	Group concentrate on 1 product	Worksheets	Not enough Sales	Take probs	First bacon meet wrong
12	Product families	Learning about other functions	Big picture	No		Meetings offsite

Bradley Interview Responses - After SOLP (contd.)

First Process

Manager	18 Improv perform	How know?	Q19 Hard to plan now?	20 Interest in pers dev	What addressed	21 Other comments
1	Yes	More clear direct'n.	Yes	Yes	Change to strat. thinking	Worthwhile process for me & team
2	No	No actions taken, p	Yes very	Yes	Fox wants to see rabbit	When start to think strategically?
3	Yes	Better decisions	No	?	-	Good but use real information
4	Yes	Focus whole bus.	No press on	Yes	Supply pigs from outside	Equipt. & mrk. have to be addressed
5	Unsure	-	-	Yes	Cold store & distribution	-
6	Unsure	Too early	No	-		Incl. Sales & go to company plan
7	Yes	Discuss plans	No	Yes	-	A good exercise
8	Unsure	Too early	Yes dir uns	Yes	Main Strategy	No link beween strategy & bus. plan
9	Yes, hop	Bratwurst discuss a	Yes,who	Yes	Clear direct. from above	Not enough feedback from Sales
10	Unsure	-	No	No	-	No
11	Yes	Learn problems	No	Yes	Fincl vs long term conflic	Chance to talk long term
12	Yes	All processes help	Yes,political	Yes	Room for improvement	More sales involvement

Bradleys Interview Responses - After SOLP **Second Process**

For Managers' positions, see key below responses.

Manager	Q1.Time proportion			Q2. Examples			Q3. Policy Areas		
	Run	Tactical	Strategic	Run	Tactical	Strategic	1	2	3
1	20	50	30	Decision to sell meat	Sign off EBA agreement	Vegetarian products	Facilities	Meat supply	Route Trade
2	50	30	20	Organise production	Prepares recipes	Decide submit samples	New Product	Prod Proc.	
3	70	20	10	Adjusted line crewing	Yield data collection	considerCapex proposals	Prod Process	Human R.	Quality
5	50	25	25	Change manning	Import automatic m/c.	Establish Japan market	Control P.	Prod Proc.	Meat supply
6	70	25	5	Purchase of meat	Stock control	Pork matrix structure	Quality	Meat Supply	Prod Proc.
7	20	60	20	Facilitation of meetings	Mentoring managers	Implement change mgt.	Control P.	Human R.	
9	15	80	5	Sort probs. on floor	Train to improve skills	Attend game plan meetg	Prod Proc	Quality	Human R.
10	10	35	55	Month end reporting	Product specifications	Redevelop QA system	Quality	Prod Proc.	
11	70	10	20	Supervise workers	Training employees	Attain HACCP certificate	Control P.	Prod Proc.	
12	30	60	10	Managers activity lists	Cartonisation	Outsource warehouse	Capacity	Facilities	Distribution
13	30	40	30	-	-	-	New Product	Distribution	Route Trade
14	50	30	20	Arranging delivery	New product launch	Strategic promotionplans	New Product	Retail sales	Marketing
Average	40.4	38.8	20.8						

Key to Managers' positions (Numbers missing refer to managers not involved in this application)

1 Operations Manager
2 Product Development Manager
3 Packaging Manager
5 General Manager, Boning
6 Deputy Purchasing Manager
7 Organisation Development Mgr.
9 Process Development Manager
10 Quality Manager
11 Production Manager
12 Logistics Manager
13 Sales Manager, Route Trade
14 National Account Manager, Safeways

Bradleys Interview Responses - After SOLP (Contd.) **Second Process**

Manager	Q3a. Current Decision 1	2	3	Q4. Too Hard?	Q5. Impair?	6. Achieved by process General
1	3rd party warehouse	1999 procure strategies	New franchise arrange	Yes, sale	Busin. sale	Holistic approval of plan
2	Nature of samples		-	No	No, ignore	Release products
3	New m/c proposal	Decide training requirements	-	No	Not u'stand	New m/c improves credits
5	New MSQA manual	Rib puller machines	-	No	No	Insight into Strategic plan
6	-			-	No	Best u'standing of trends
7	Manag't. Structure	Implement meeting structure	-	-	Yes	More discussion
9	Improve processes	Facilities capital expenditure		No	No	Nothing
10	Access restrictions	Impl revamped QA system	Traceability of salami	Intro. of operating plans	Yes,R&D	HACCP and QA review
11	-			-		
12	Capacity plan	Restructure warehouse	System implem.	-	Yes	Dept restructure
13	New Route products	Performance Indicators for dist'n.	Evaluate route trade	No	No	Closer liaison sales-ops
14	-	-		Yes	-	Better u'stand processes

Manager	6. Achieved by MS process (contd.) Better str mgt?	Closer?	Actions taken	Q7 Improve Dons	Q8 Most imp. busin. Area	Q9. What is being done? a. by you	b. by others
1	Yes	Yes, esp. \	Yes	Strategy supp bus decn	Relate to retail customers	Ops. Integrate	Support to dept. level
2	Yes	Yes	Yes	Better marketing	Marketing	Initiatives	?
3	Not necessarily	Yes	-	Reduce ad hoc nature	Industrial supply	Prod. report	Improve meat quality
5	Yes	Yes	Yes	Open commun wi B'room	Institutional outlets	Source pigs	-
6	Yes	No	No but change soon	Strategic alliances	Food service	Eval.suppliers	Establish relationships
7	Yes	Yes	Easier to discuss	Senior mgrs delegate	Packing formats	Aid discuss	Partic. In discussions
9	Yes	Yes, to so	Participate in meetings	Imp. to maintain quality	Qual. maintains image	Product safe	Operate more to SOPs
10	In some respects	Yes	Yes	Teams to dev strategies	Become a categ. builder	Devt. systems	New lines expand busin.
11							
12	Yes & No	Yes & No	Yes	L'ship, Vision & team dev	"The Customer"	Cust. service	-
13	*more focused*	Yes, u'star	Yes, joint projects	Needs integ. Comp sys	Combat competition	Order winners	Teams develop new lines
14	Yes	Yes	No	Better relate wi customers	Product development	-	-

Bradleys Interview Responses - After SOLP (Contd.) **Second Process**

Manager	Q10 Inhibitors	11 New Contacts	New outside contacts	Q12 How contacts improve	Q13 Supply C.M. important?	Why important	14 Helpful SOLP areas 1
1	Only business sale	Yes	KR Darling Downs	Alliance of major malls.	Yes	Cost effective	Format used supports
2	Dec make limited to c	Yes	New customers	Market & product info.	Yes	Outside info.	Discuss operations issues
3	No	No	-	Increase range of ideas	Yes	Product reqmt	Current ops strategy
5	No	Yes	Pig growers	Greater export sales	Yes	Sales drive	Break bus. into segments
6	Resources	Yes	-	Broaden supplier base	Yes	Meat procure	-
7	Procrastination	Yes	Suppliers of support	Benchmarking	Yes	Role across	work groups, discussion
9	Casual labour can da	No	-	n.a.	No	n.a.	Reflect on all facets
10	Too many activs w/o :	No	-	Knowledge of business	-	-	-
11							
12	Lack of bus. U'standi	Yes	Ind'l cust, Retail DC	Identify areas to improve	Yes	Weakest link	Bought closer to manuf.
13	Green light for res. al	Yes	-	-	Yes	Peers giverole	Identifying Dist. Comp.
14	-	No	-	How they see us	Yes	Perspective	Understand operations

Manager	14 Helpful SOLP areas (contd.) 2	3	Q16 What could be improved 1	2	17 How impro meetings	18 Improve performance	How know?
1	Customer visits provoked thought		Mgrs.must own outcome	Include more supp. chain		Yes	Outcomes
2	Improve individual focus	Focused products	Segment of markets	-	-	Unsure	Don't
3	Observing policy ideals	-	Stick to current areas	Better u'stand market	OK as is	Yes	Better relate
5		-	Stick to time schedule better		-	Yes	Analyse bus..
6			-		-	Unsure	-
7			Thinking longer term		-	Yes	Crossfunctior
9	Overview as a team	Mgrs become open	Deeper details	2 hour meets.	OK, run well	Yes	Quality
10			Lack of background info.		OK	No	Not changed
11							
12	Learned about Bradley products	Log. work with Ops.	Sales/Market input			Unsure	Work style
13	Identify order winners	Problem area actions	Cross-funct. teams		Facil. Exceller	Yes	Talk same
	Involved with operations	Investigate products	-		-	Yes	Include ops.

Bradleys Interview Responses - After SOLP (Contd.) **Second Process**

Manager	Q19 Hard to plan now?	Q20 Interest in pers devt?	What addressed	Q21 Other comments
1	Yes	Yes	-	Positive process atmosphere drives wider behave
2	Not really	Yes	Strategic training	-
3	No	Yes	Exposure to SOLP	Could be more visible
5	No	Yes	Time and information	Difficult coming from my position
6	No,little impact	No	-	-
7	No			
9	Yes	No	-	Screen projects, not spend time on dips
10	No	Yes	Doing outside studies	More planning up front, time & depth
11		Yes		
12	Yes,low motivation	-	-	Bradley needed this process but understand ltd.
13	No	Yes	-	Involve more employees from shop floor
14	No	Yes	Information	-

APPENDIX 5

POST SOLP IMPLEMENTATION INTERVIEW QUESTIONS AND RESPONSES AT MEATWORKS

Post-SOLP Interview Questions – Flock

Question	Responses	
	Managing Director	***Financial Controller***
1. Did team members obtain a vision?	Yes, opportunity for team to understand what is in his head.	GP started people's minds about what future may hold.
2. What verifiable outcomes resulted? - $ spent - Processes changed - Team relations & actions	 $1.5M building chillers & freezer. Moved to 2 shifts in boning. "Watching a business grow is like watching kids grow".	 - - Communications probably improved because of environment of discussion.
3. Plans developed without Game Plan?	Yes, I think.	Yes, may have been different.
4. Did Game Plan contribute to better decisions?	It would have happened anyway. Managers more in tune.	Yes, because aware how things fit together.
5. Improved management performance? 5a. Targets gained though Game Plan?	Yes, communication. Better management style.	No, increased communication due to other reasons.
6. How important to have external facilitator?	Have to have an outsider.	Extremely.
7. Anything missing from Game Plan process?	Lack of commitment by Flock.	People like to know where they are going. Explain process, not lead.
8. Has GP* motivated managers to pull together?	Yes, although Livestock manager was later.	In the short term it did. Longer issues.
9.Were O & L strategies combined? 9a. Is it important to plan O & L together?	Yes, internal logistics at operational levels. Yes.	Yes, sales is the most important part of the business. Yes, very important.
10. Other strategic initiatives since Game Plan? 10a. Due to GP process?	1. Decided to freezing and chilling, not boning 2. Install chill & rinse. 3. Study rejected downward hide puller. No, only number 1.	(prompted) Rinsing and chilling machine, worth $350,000. No.
11. Did GP improve O & L** performance?	Don't know.	Yes because of the focus it gave.
12. Did members gain longer view? 12a. Does this help with strategic decisions? 12b. Example of such a decision?	Yes, I think. Should, though we are still very day-to-day. Too long ago to remember.	Some have, all except livestock manager. Yes, when a decision is taken managers consult. Taking Franklins as a direct purchase.

13. Were GP strategies communicated through management team? 13a. Did this affect performance?	Yes Communication has improved, still got livestock manager.	Done with Game Plan, yes. Yes, see previous.
14. Is Meat Industry significantly different to other manufacturing industry?	No, all manufacturing industry the same. Product is perishable.	Yes and no. Believes that business does not change dramatically.
15. What changes would improve Game Plan?	More commitment and more confidence to over ride the MD.	To re do, every six months.

* GP means Game Plan ** O & L means Operations and Logistics

Post-SOLP Interview Questions – Wilson

Question	Responses	
	Sales and Marketing Director	***Operations Director***
1. Did team members obtain a vision?	A bit of a vision.	Yes. They had a prior vision from a workshop.
2. What verifiable outcomes resulted? - $ spent - Processes changed - Team relations & actions	Need to see Action Plans to remember	Major use of contractors. QA Officers developed management skills and Directors focused on finances.
3. Plans developed without Game Plan?	Yes, they would have been. GP good to have.	Yes. Not same format. GP gave focus on Boning & Boxed Beef.
4. Did Game Plan contribute to better decisions?	See above. 25% of decisions would not have happened without Game Plan.	50% of decisions were helped by Game Plan.
5. Improved management performance? 5a. Targets gained though Game Plan?	Yes, had very detailed weekly figures for last 12 months. Sales increased by 16%.	Yes by QA Officers. Sales Director concentrates on weekly figures.
6. How important to have external facilitator?	Very important. Would not have happened without.	Always important. Ask the right questions.
7. Anything missing from Game Plan process?	Not sure. Very complicated.	Specifics of the industry, benchmarking.
8. Has GP* motivated managers to pull together?	Yes, they have pulled together over last 2 years.	Started weekly meetings which evolved into weekly reports which all managers get.
9.Were O & L strategies combined? 9a. Is it important to plan O & L together?	*No answer*	Yes, the big picture. Otherwise staff don't grasp the effect that dirty stock has on customers. Yes
10. Other strategic initiatives since Game Plan? 10a. Due to GP process?	*No answer* More marketing philosophy.	Further work with farmers.
11. Did GP improve O & L** performance?	Yes, traceability of product.	Gave focus. Gained ISO 9002 for boning room.
12. Did members gain longer view? 12a. Does this help with strategic decisions? 12b. Example of such a decision?	See above. Some Export sales made	Definitely, think about next week. ISO 9002.

13. Were GP strategies communicated through management team? 13a. Did this affect performance?	Start between all people. Not known, possibly.	Various longer meetings. Train the trainer, etc.
14. Is Meat Industry significantly different to other manufacturing industry?	*No answer*	Not unique but some differences. Hard to make money. So many variables.
15. What changes would improve Game Plan?	It is long-winded and complicated. Needs more tailoring for Wilson.	Process questionably right for Wilson. Nothing wrong with the process- get people to think laterally.

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Post-SOLP Interview Questions – Bradley

Question	Responses	
	Operations Manager	***Organisation Development Manager***
1. Did team members obtain a vision?	Realised what is/ is not important in the grand scheme	Started to identify resources needed. After-sales service
2. What verifiable outcomes resulted? - $ spent - Processes changed - Team relations & actions	 $ 250,000 + $130,000 Fresh Sausage, Bacon folding & cooking. Sales involvement in business direction.	 - Fresh sausage was first time looked at something different. Enabled people to think more widely.
3. Plans developed without Game Plan?	Hard to say, yes, decisions made. Gave us a planning process	Fresh sausage would not have happened. Previously bound by tradition
4. Did Game Plan contribute to better decisions?	Gave us an O & L** -wide planning process. Analysis lead to better decisions.	Yes, between Sales and Operations.
5. Improved management performance? 5a. Targets gained though Game Plan?	Yes, in Sales and O&L improved understanding. All KPI's increased in O. & L., e.g. yields.	Yes, believe has. No longer work in isolation. Fat not now acceptable, new packaging.
6. How important to have external facilitator?	Very: allows uncluttered thought pattern.	Extremely, stubborn people needed someone with credibility.
7. Anything missing from Game Plan process?	No, but needed clearer business direction & understand outside world.	Missing sales managers. Not sure focussed on logistics plan outside F. Sausage
8. Has GP* motivated managers to pull together?	Yes, without doubt. Sales/ operations wall pulled down.	Yes
9. Were O & L strategies combined? 9a. Is it important to plan O & L together?	Yes, product plans had both. Yes, whole channel	Not in general, only in Fresh Sausage. Yes, needs more success
10. Other strategic initiatives since Game Plan? 10a. Due to GP process?	Yes: Greater emphasis on critical communications, e.g. product development. Yes	Not really, in spite of attempts. Own area still more important. Ops. Mgr. Sets targets
11. Did GP improve O & L** performance?	Without doubt. F. Sausage & product quality.	Yes, sales up 10%, new products, stronger industrial sales.
12. Did members gain longer view? 12a. Does this help with strategic decisions?	Partially, sales have some u'standing of operations. Yes, morale improved	To some extent, until pressure is on. -

12b. Example of such a decision?	2 good operations supervisors taken into sales	Packaging, better problem solving
13. Were GP strategies communicated through management team? 13a. Did this affect performance?	Yes, several times. Yes, heightened its importance.	Yes, by presentations at end of SOLP seen by management team. Yes
14. Is Meat Industry significantly different to other manufacturing industry?	No, although very complex. Has suppliers & customers. Food safety paramount	Yes now, due to media coverage of food safety. Handling raw food needs to change
15. What changes would improve Game Plan?	Have strong business plan from corporate gives process more meaning	Make working groups more accountable. Everyone to contribute.

* GP means Game Plan ** O & L means Operations and Logistics

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