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## **WORKING PAPER SERIES**

### **A strategic planning process for several supply chain echelons**

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## **A strategic planning process for several supply chain echelons**

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## **Abstract**

This paper investigates the ability of a team from a manufacturer and its supply chain partners to formulate strategic plans for entire supply chains. Research aims to improve the *process* of formulation by combining knowledge from operations strategy and socio-technical research. The research uses a process called Strategic Operations and Logistics Planning (SOLP) in which a team of managers craft strategy. SOLP assists them to derive order-winning criteria and design policy actions for certain product groups. The SOLP process was carried out twice at a heavy fabrication business. The managers used the process to craft strategies whilst the researchers, acting as facilitators, studied the planning process by interviews and participant observation. The research concludes that a strategic supply chain plan can be formulated. The need to include members from all supply chain echelons in the team and the effect of their capability and authority is investigated. Assistance is probably necessary for full implementation of those plans.

**Keywords:** strategic planning, supply chain, process, action research, operations strategy.

## **Introduction**

This research examines the way in which a major heavy fabrication company and its partners create a strategic supply chain plan for selected product groups through an action research process. The research aims to provide sufficient support so that supply chain members produce a coherent strategy for the whole supply chain. Researchers use a position of trust as process experts and workshop facilitators to observe the process and the supports required in depth.

The dearth of strategies for a supply chain in actual firms is considered to be partly due to the lack of suitable processes to assist managers to formulate strategies (Skinner 1992). The steps required in such a process are known (Hill 2000) and a complete, practical process assisted by worksheets is available (Platts & Gregory 1990). We believe that a number of process supports are required to enable a team of managers to formulate operations strategies. External facilitation allows team members to concentrate on the plans rather than the process. Tailoring the process to the supply chain companies reduces negative impacts of a new process. Use of group consensus allows all members to contribute and achieve results quickly.

The research uses the Strategic Operations and Logistics Planning (SOLP) process (Sadler & Hines 2002). SOLP requires a team of 7-12 managers to form supply chain strategies over 15 hours in seven workshops. SOLP requires an external facilitator and seven worksheets are used to support strategy formation. The process was carried out twice for several product groups at the fabrication company. The first time, representatives of supply chain partners were in the team. The second time, the team was restricted to fabrication company managers.

Our research investigates whether the process and supports enable a team to formulate strategic plans and whether further assistance is required to implement those plans. Several plans were formed in both process applications. The fact that only some of the planned actions were carried out suggests that support is also required during the implementation phase.

## **Research Background**

The steps required in a strategic operations planning process (Hill 2000) are firstly, to find out the business objectives of the business or supply chain. The second step is to determine a marketing

strategy and analyse product markets. The third step is to determine the order winners, which operations need to provide for companies to win business in their chosen markets. Fourthly, it is necessary to choose the operations processes and infrastructure, which will best achieve those winners. To meet this need, the Manufacturing Audit Approach (Platts & Gregory 1990) is a complete, practical process, which provides effective support for the formulation of operations strategy. Mills added the requirement to embed the planning process into management's regular business processes (Mills et al. 1996). Menda and Dilts created an extended process model and applied it in one case (1997).

We extend the application of operations and logistics in the business strategy from one firm to all the firms in a supply chain. Some authors advocate the study of dyadic relationships between two partners within a logistics channel (Williamson 1985; Ford 1997). However, the present research concentrates on the synthesis of all partners in the supply chain because an analysis of individual dyads may not capture the essence of the synergies of the various parts. Porter (1985) provided a basic economic perspective on the key functions in the value stream of individual companies. The extension of strategic operations planning to the operations of entire supply chains, rather than single manufacturing businesses, started with work by Jouffrey and Tarondeau (1992). Many authors have said that this is required (LaLonde & Masters 1994; Fabbe-Costes & Colin 1994). Supply chain partnerships were observed by Lamming (1989) in suppliers to the automobile industry. Hines *et al.*, (2000) show the need to deploy strategic management in a value stream including the creation of trust between strategists of two firms.

Supply chain management requires overseeing the flow of materials from source to manufacture and finished products onwards to the ultimate customer to deliver superior value for customer and chain partners (Harrison & van Hoek 2002). 'Overseeing' comprises management of the supply chain and its constituent firms and sharing information. This concept is adopted by many business leaders as an important aid in the design, planning and control the network of facilities and tasks that comprise the supply chain. Womack and Jones (1994) suggest the value stream should be viewed as a 'lean enterprise', a group of legally separated but operationally synchronised companies. They provide examples in which such an enterprise achieves greatly enhanced performance. There are difficulties in achieving democratic relations between separate companies. Recognising this, Cooper *et al.* (1997) define a 'channel integrator', as a company which works with its first and second tier suppliers and its first and second tier customers. Their 'channel integrator sees one party, a channel leader, playing a key role in steering the overall channel strategy and getting channel members involved in the channel strategy'.

We argue that operations planning is required by entire supply chains because business competition demands coherent strategies from such value streams (Jouffrey & Tarondeau 1992; Hines *et al.* 2000). A fuller discussion of this issue is given in Sadler and Hines (2002). Strategic operations and logistics decisions aim to identify policies which will achieve customer criteria for sustained order placement. These criteria are not significantly changed for supply chain planning (Slack 1991), from the operations of manufacturers, since the overall purpose of a supply chain in serving customers is the same as that of the manufacturer. Hence, we argue that the operations and logistics functions of all supply chain partners need to connect their strategies. They should formulate a set of strategies, represented by a time-phased series of actions, which will achieve the aims of all partners in the supply chain in sourcing, manufacturing and distributing products to profitably satisfy customer needs. We believe planning conducted in concert generates a greater range of alternatives and hence better overall strategies than separate plans would achieve.

The supports to the process steps in the formulation of a supply chain strategy identified above have many elements in common with socio-technical theory. These elements include participative

intervention processes involving relevant managers and employees from members of the supply chain (Sharp, Hides & Bamber 2000) and structural change to organisations involving the creation of team based parallel flows, which focus on particular products (Van der Zwaan 1999).

In the socio-technical approach, intervention to assist change in organisations starts from an acceptance by senior management that the ideas provided can help the organisation. Once the process of intervention has started, it is crucial that top management support continues to focus on the intervention until it succeeds (Haak 1994). The intervention can take the form of an expert solution, which is imposed on the organisation. Such an approach runs the risk of rejection by middle management, support staff and workers who may feel threatened by the intervention. The ownership of changes proposed by an intervention is a critical principle for the success of change processes. Besides greater understanding and commitment to the change, the involvement of employees from all relevant parts of the organisation gives greater likelihood that the change will be a practical solution to the organisation's problems. A further refinement of intervention strategies is 'democratic dialogue' (Gustavsen 1996) which involves a cross section of members from a range of organisations meeting and exchanging ideas about change processes in their organisations. This type of intervention is used in the present case study.

Recent work by Dutch socio-technical researchers focuses on reorganising the task structure before redesigning the control structure to obtain 'whole tasks' or team based parallel flows centred on particular products (Van der Zwaan & De Vries 2000). Product flows can be segmented into a series of 'whole task' teams if required by the complexity of production. Such restructuring aims to simply control production by concentrating it in the 'whole task' teams and also to integrate specialist support functions into the teams. It thus seeks to attain congruence between support systems and the production control and to redesign operations processes to obtain sufficient focus on their behavioural aspects, including a participatory approach to reorganising. In this context, the operation of a supply chain is seen as a 'whole task', which cannot be planned as a series of separate segments.

This research investigates the ability of a team to formulate supply chain strategies if provided with sufficient support. The research questions in this paper are:

- Is it possible for a team of supply chain managers to formulate a strategic operations plan for the whole chain?
- Should the supply chain strategy team include members from all echelons in the chain?
  - If so, how is sufficient trust achieved?
- Given that external facilitation appears to be necessary for plan formulation, is it sufficient to end external help when strategic action plans have been derived or is implementation assistance critical to put into practice the strategies derived?
- What are the effects of the capability level of the managers involved and the degree of autonomy available in restrictive corporate bureaucracies?

### **Action research methodology**

The methodology adopted for this research is a modified form of action research originally developed by Lewin (1951). In Lewin's original approach the researchers collected information on the organisation, fed them back to the stakeholders, analysed the results with the stakeholders and planned for change. In this case the members of the supply chain had the task of deriving strategic plans, whilst the researchers acted as facilitators and used this position to observe the success and limitations of the

process (Checkland 1991). Action research based case studies are preferred to analytical studies, because they allow the researcher close access to the planning process so that he or she can observe participant's reactions. Action research allows the researcher to observe at first hand interaction between managers during meetings and to get to know them over an extended period. It is difficult to envisage any other methodology that would provide such a rich picture of the strategy formulation process. The two case studies reported here followed this method, because the researchers worked with a team of managers in a series of workshops. The use of action research to study strategic operations or logistics planning has been very limited. Platts and Gregory (1990) pioneered its use in their process.

Strategy process research is well served by action research, because the fundamental questions being addressed, such as the relationship between the supply chain company's decision processes and their competitive position, require studies from within. The chain partners, although with different roles, were involved in a change to the system itself, because the participative planning process adopted was different to that which the organisation would normally use.

## **Research Method**

The method of research provided various supports through the Strategic Operations and Logistics Planning (SOLP) process and the steps followed by team members in undertaking the process. Developed from the Manufacturing Audit Approach (Platts & Gregory 1992), the SOLP process contains the following supports required by teams to craft operations strategy:

- Steps and worksheets: the provision of help in carrying out each task, such as defining the task and providing worksheets, to guide its completion (Platts 1993; Sadler 1999),
- Use of group consensus (Mills et al. 1996; Menda & Dilts 1998) so that a group operates democratically to formulate strategy,
- Workshop organisation, breaking up the process into a number of manageable workshops,
- Tailoring to suit closely the needs of the individual company (Menda & Dilts 1998),
- External facilitation provided by researchers being present during formulation (Fine & Hax 1985),
- Education in the essential parameters of the management of logistics channels and supply networks, and
- Embedding the process into the formal practices of companies (Sadler 2001).

The steps undertaken and the workshop organisation contain the following features (refer Figure 1). About seven workshops are used rather than carrying out the whole process in one continuous seminar. Team members interview a major customer of the supply chain to develop a common understanding of the real needs of end consumers. A final worksheet lists actions in the various policy areas with the time sequence in which they need to be carried out. SOLP recognises the need to embed the process into team members' normal practices by repetition to increase its effectiveness. Implementation assistance was not provided.

We believe that the operations planning process comprises a team thinking its way carefully to establish specific forward goals and the operations and logistics actions required to move towards those goals. Experience leads us (Sadler 1999) to argue that managers, once they are thinking strategically, tend to remain stationary unless a series of worksheets stimulate them to progress towards action plans. The two most important sheets are 'Order Winners and Qualifiers' (sheet 3) and 'Action Plan' (sheet 7). We emphasise that the other worksheets have only immediate value: the value comes from the

strategic thinking process that they enable. Figure 1 shows the thinking process that team members go through, down the left-hand side,

- Understanding benefits of operations strategy
- Understanding the needs of Customers
- Generating alternative strategies

The worksheets assist members to think strategically about their goals for several product families and the actions needed to reach those goals. For a fuller description of these steps, features, and worksheets refer to Sadler (1999).

The research application of the SOLP process was undertaken twice at the Heavy Fabrication Business. The first process involved members from suppliers and a dealer, whereas membership of the second process was limited to HFB managers. In each case the researchers acted as facilitators and were able to observe the events in detail.

Structured surveys were used at the end of each SOLP process to obtain team members' views of the pros and cons of the process and the effectiveness of the outputs. After the second process, many of the team members were interviewed to explore their perceptions of the process and the value of the results in relation to the needs of the workplace studied, HFB.

## **Process Application**

The central company in the supply chain, HFB, manufactures earthmovers and excavators in Melbourne, incorporating major components from its American parent company. The manufacturing arm of HFB turns over about \$20 million per year and employs 300 people. HFB has been established in Melbourne for over fifty years. It has a conservative management, heavily constrained by slow reactions of its parent. The innate conservatism is demonstrated by their use of 15 year-old computer systems, although they are organised into teams.

HFB is dominated by engineers because of the high technical ability required from its earthmovers. Fabricated parts move slowly from one production area to another with much of the work done being welding. Most products are made to an individual specification. Imported parts, including complete motors and gearboxes take four months to arrive from America after order. Because imported parts complemented the products planned by SOLP, this importation slows down the tempo of production. The Manufacturing and Sales Departments of HFB have very different outlooks due to the Sales managers being responsible for a wide range of earthmovers, many of which were imported directly from the USA. Hence they felt less directly responsible for the earthmovers manufactured in Australia. HFB managers were preoccupied with an improvement process called 'Class A' which was mandated by the US Head Office for all subsidiaries. 'Class A' is a process driven by management consultants which nominates a plethora of key areas and trains some employees to organise improvement projects which will lower costs.

Team members stated that getting new resources was a slow process in HFB because of the dominant, slow reaction by its American parent. Items of capital expenditure needed to be included in the budget once a year. Operations were complicated by a change in authority structure during the first SOLP process whereby the Manufacturing Director became responsible to the Regional Vice President in Singapore.

Two suppliers were represented on the first SOLP process. The first was a large Australian steelmaker represented by its Victorian State Manager. The second was a steel treatment company from New South Wales, represented by its Sales Director. The third external company represented on the team

was a direct customer of HFB. The Victorian dealership, which sold most of HFB’s earthmovers in that state, was represented by its Regional Sales Manager. HFB sell only through its state dealers who are separate companies with franchise agreements with HFB.

Before research started, several prior discussions were held with the Operations Director to gain commitment to seven two-hour workshops by relevant managers of the heavy fabrication business, its suppliers and a dealer. In the first SOLP process, the team comprised nine members from HFB and three from other companies in the supply chain (see Table I). All the HFB members except the Sales Representative and the Internet Business Officer, were responsible to the Manufacturing Director in the Manufacturing Division of HFB. The number was high because the Manufacturing Director saw the process as a team building exercise as well as a planning process. The Sales Representative had very little interest in the products planned and he was passive in those meetings he attended.

**Table I** Composition of Teams in the two processes

| <b>Affiliation</b> | <b>First Process</b>      | <b>Second Process</b>        |
|--------------------|---------------------------|------------------------------|
| HFB                | Manufacturing Director    | Manufacturing Manager        |
|                    | Production Manager        | Assistant Production Manager |
|                    | MRP Administrator         | MRP Administrator            |
|                    | Project Engineer          | Project Engineer             |
|                    | Materials Manager         | Materials Manager            |
|                    | Industrial Engineer       | Master Production Scheduler  |
|                    | Facilities Engineer       | Engineering Designer         |
|                    | Sales Representative      | Sales Manager                |
|                    | Internet Business Manager | Regional Sales Manager       |
| Suppliers          | State Sales Manager       | None                         |
|                    | Sales Director            |                              |
| Dealer             | Regional Sales Manager    | None                         |

The first application of SOLP took place in seven workshops over six months. The 12 team members met in an HFB conference room to study strategies for two types of earthmover buckets. Each workshop was quite productive, and members were very positive, but workshops were at monthly intervals, due to the difficulty in getting people from different places together. Consequently some time and momentum was lost as members regained an understanding of the point which they had reached. The facilitator briefly introduced the SOLP concept at the first workshop and then requested each team member to fill in the various worksheets. Completed worksheets were summarised by the facilitator and fed back to the team. Team members worked through about one worksheet per meeting. The third meeting was held at the dealer’s premises. Team members were addressed by a customer who purchased buckets. The direct customer input was an eye-opener to HFB manufacturing managers, who had limited customer contact. For the last three worksheets, team members were allocated to two groups, with each group working on one product group, building a single set of strategies. One author assisted each group. At the end, the team had constructed strategic plans for two product groups and they were confident these could be implemented without any hindrances except for the need for capital expenditure to be authorised by HFB’s parent.

The second application of SOLP took place in seven workshops over six weeks. The team comprised nine members, limited to manufacturer members from engineering, operations, purchasing and marketing areas of HFB. Members included two managers from the national Marketing function (see Table I). A newly appointed manufacturing manager, from outside HFB, replaced the Manufacturing Director as the most senior production manager on the team. Members developed strategies for two

types of truck bodies for large earthmovers in which the ‘cab chassis are imported from USA for Australian mine sites. A much faster timescale was achieved, assisted by all the members working for HFB and working in the same location. The two HFB marketing managers were interested in the process and provided much stimulation. Because the customers were located in northern Australia, 1200 kilometres away, they were not able to attend a workshop. Instead they were interviewed by conference telephone. This was quite effective in giving team members a first-hand knowledge of the problems and views of their customers. A longer, five hour, meeting was held at the last workshop. The team collapsed the product groups from four to one. At the end of the workshops, the team had constructed strategic plans for two groups of truck bodies along the whole supply chain. They then reported the findings to the Operations Director.

## Results

The result of the two SOLP processes was four action plans for HFB and its partners to implement. Table II shows the results achieved in six SOLP applications, comparing the processes at HFB with prior work in the meat processing industry (Sadler & Hines 2002). The first line shows that the work at HFB was not as successful as in the meat processing industry. The next four lines summarise the process support given by the SOLP process. The importance of external facilitation and the achievement of group consensus are notable. The last line shows that attempts to embed the process have been made at two companies with greater success at Bradley, a Victorian smallgoods company, than at HFB.

Table II Results achieved in six SOLP applications

|  | Flock     | Wilson           | Bradley                 |                   | Heavy Metal Fab.        |
|--|-----------|------------------|-------------------------|-------------------|-------------------------|
|  |           |                  | Process 1               | Process 2         |                         |
| Success for Action Plans (implemented) | Yes       | Partial          | Yes, extremely          | Yes, considerable | Limited success         |
| <b>PROCESS SUPPORT</b>                 |           |                  |                         |                   |                         |
| Importance of external facilitation    | Essential | Very necessary   | Very important          | Extremely         | Very important          |
| Faults of external facilitation        | No faults | Simplify process | Improvements suggested  | No faults         | Explain steps more      |
| Group consensus                        | Attained  | Yes, achieved    | Yes, ‘wall’ pulled down |                   | Yes, more focussed plan |
| Tailoring                              | Yes       | Yes, not enough  | Yes, extra criteria     | Yes               | Some                    |
| Embedding                              | No        | No               | Yes                     | Yes               | Yes                     |

The other outcome was the views of team members on the assistance which they obtained from the SOLP process. Eight members were interviewed nine months after completion of the first process and three months after the second. Key aspects of the responses are set out in Table III and discussed in the next section.

**Table III** Interview Responses (GP = Game Plan)

|   | <b>Production Manager</b>   | <b>MRP Administrator</b>   | <b>Project Engineer</b>  |
|---|---|--|--|
| 1. Did team members obtain a clear vision?                          | Better understanding of customer needs  | All went through an education process  |  |
| 2. What verifiable outcomes resulted?                               | Marketing has better understanding of operations capacities. Lead times for buckets reduced from 40-60 days to 28 | Agreement with suppliers led to steel provided on consignment. Other GP targets not reached due to lack of resources and ownership of the implementation | Stocking policies and forecasting improved. Consignment of steel from dealers improve lead time for buckets. |
| 3. Plans developed without Game plan?                               | GP greatly assist introduction of Class A   | GP helped achieve Class A targets faster   | Yes, but in longer time frame  |
| 4. Did the Game Plan contribute to better decisions                 | GP brought managers together more   | GP gave understanding of what needed to be done  | GP provided focus on known problems and check on what other departments were thinking                        |
| 6. How important is the external facilitator?                       | Facilitator performed well but limited by involvement of group  | Facilitator ensured that meeting programme schedule kept and plans completed   | Helpful activity, especially having worksheets to get through process  |
| 7a. Anything missing from Game Plan process?                        | Need more specific measures on performance issues.  | Need to identify finer actions needed to execute the GP.   | Need meetings to review progress in implementation.  |
| 7b. Did ownership of the process occur?                             | Yes, meeting the customer was turning point to achieve this   | Yes, but more so in the second GP Process  | Nobody owns the process to ensure implementation   |
| 8. Has Game Plan motivated managers to pull together?               | Greater understanding of one another's jobs   | Greater mutual understanding between different areas achieved  | Gave managers greater focus on existing problems   |
| 10. Strat. initiatives since Game Plan?                             | Yes.  | Yes  | Yes  |
| 10a. Due to Game Plan Process                                       | No, but Game Plan process carried out for new channel   | No   | No   |
| 11. Did Game plan improve operations and logistics performance?     | Yes, in combination with Class A it lifted performance  | Having steel available on consignment improved operations and logistics performance  | Helped to some extent with Class A   |
| 12. Did members gain a longer view?                                 | Yes.  | Yes.   | Yes. Highlights importance of coherent plans   |
| 12a. Does this help with strategic planning?                        | Believe a process like GP necessary for future planning   | Gets people to think in a longer time frame which complements Class A.   | Yes  |
| 12b. Example of such a decision?                                    | Use of GP again for another new product channel   |  |  |
| 13. Were Game Plan strats. communicated throughout management team? | Most of management team took part in Game plan  | Yes  | Yes. All relevant managers involved  |
| 13a. Did this affect performance?                                   | GP assisted Class A implementation which raised performance   | Assisted Class A implementation  | Helped to speed up Class A   |
| 15. What changes would improve Game Plan?                           | Have more precise measures of performance of the group  | Quantify cost of not implementing GP to pressure senior management   | Get commitment of senior managers to ensure plan is implemented.   |

|   | <b>Materials Manager</b>   | <b>Industrial Engineer</b>  | <b>Sales Manager, Dealer</b>   |
|---|--|---|--|
| 1. Did team members obtain a clear vision?                        | Better understanding of customer expectations and supply chain   | Good to see outcome at end. Get bigger picture outside manufacturing      | Got an insight into causes of HFB's problems   |
| 2. What verifiable outcomes resulted?                             | Suppliers agreed to supply on consignment. Delivery performance improved                                 | Manufacturing process being documented to get greater consistency of work | Lead times have not changed, but demand high due to dealer having record year may have affected this |
| 3. Plans developed without Game plan?                             | Not get suppliers, customer in same room without GP  | Not involved in previous planning processes so not sure                   |  |
| 4. Did the Game Plan contribute to better decisions?              | GP process involve more people in decisions  | More focussed approach to decisions                                       |  |
| 6. How important is the external facilitator?                     | Helped managers to break out of pre conditioned thoughts   | Having a fresh pair of eyes looking at issues important                   | Essential to drive the process. Enabled them to think widely   |
| 7a. Anything missing from Game Plan process?                      | Need follow up process with regular reviews and internal champion  |   | Good to have follow up meetings to check progress  |
| 7b. Did ownership of the process occur?                           | Outcomes were very consensus driven  | Yes, ideas owned by managers involved                                     | It got everyone involved   |
| 8. Has Game Plan motivated managers to pull together?             | Given us a better understanding of each others challenges  | Good liaison during Game Plan but not otherwise                           |  |
| 10. Other strategic initiatives since Game Plan?                  | Yes, new channel   | Yes   |  |
| 10a. Due to G. Plan?  | No   | No  |  |
| 11. Did Game plan improve operations / logistics performance      | Contributed with Class A to improved performance   |   |  |
| 12. Did members gain a longer view?                               | Game Plan reinforce need to achieve aims by stages   | Yes, more focussed and clearer plan                                       |  |
| 12a. Does this help with strategic planning?                      | Yes, but strategic priorities also set by corporate level decisions                                      | Yes   |  |
| 12b. Example of such a decision?                                  | Use of Game Plan for new channel   |   |  |
| 13. Were G. plan strats. communicated throughout management team? | Yes  | All the relevant managers were in the room during the Game Plan           |  |
| 13a. Did this affect performance?                                 | Constraints of budget and corporate priorities affect G. Plan strategies, though Class A reinforces them | Yet to see new equipment in manufacturing                                 |  |
| 15. What changes would improve Game Plan?                         | Explain where going at first better  |   |  |

**Table III (contd.) Interview Responses**

|  | <b>Manufacturing Director</b>   |
|--|---|
| 1. Did team members obtain a clear vision?                               | Managers got greater understanding of suppliers and dealers requirements and situation. Up to 50% of aim of exercise was educational rather than achieving operational outcomes |
| 2. What verifiable outcomes resulted?                                    | Little action taken due to insufficient 'capex'. Steel supplies accepted on consignment to improve availability   |
| 3.Plans developed without Game plan?                                     | Most of ideas developed in SOLP already known to staff. SOLP process provided discipline and focus for ideas  |
| 4.Did the Game Plan contribute to better decisions?                      | Provides organised basis for future 'capex' and use of staff  |
| 6. How important is the external facilitator?                            | Very important because no such person available in the company  |
| 7a. Anything missing from GP process?                                    | No  |
| 7b. Did ownership of the process occur?                                  | Most staff participated well and contribution of suppliers and dealer was excellent   |
| 8. Has Game Plan motivated managers to pull together?                    | Greater understanding of one another's roles resulted.  |
| 10. Other strategic initiatives since Game Plan?                         | Yes, manufacturing of truck bodies  |
| 10a. Due to G. Plan?   | No.   |
| 11. Did Game plan improve operations / logistics performance             | To a some extent only because of limited implementation .   |
| 12. Did members gain a longer view?                                      | Process of SOLP assisted  |
| 12a. Does this help with strategic planning?                             | It helped improve staff capacity for strategic planning   |
| 13. Were action plan strategies communicated throughout management team? | Yes   |
| 13a. Did this affect performance?  | Plans have yet to be implemented  |

## **Discussion**

This section analyses key issues about the nature of the process involved in action research on supply chain strategies.

All the team members interviewed indicated that they valued both the experience of having the whole supply chain present and the action plans which developed from the process. However, the organisational context in which the SOLP process took place had a significant effect on the outcomes of the process. Initiating a planning process in a large multi national company, at the behest of local management, contends with other imperatives imposed by company headquarters. Some of these imperatives can reinforce the SOLP process, whilst others can take resources from implementation. A factor assisting the process has been the requirement that the company implement 'Class A', an improvement process imposed on the workplace as part of the overall corporate change plan. The SOLP process was seen to have given greater focus to 'Class A'. Typical comments on this were

*'I think the tasks would have been complete or would have been addressed, but it just would have been done over a longer period without the focus.'*

*'Having the SOLP process up and running prior to Class A certification commencement stood us in good stead. I think the SOLP process project got us there quicker.'*

When asked to reflect on the adequacy of the process, two team members cited the need for more detail on performance measures to be gained through the worksheets. Other members saw a need for further meetings after the end of the process to track implementation of the action plans (see Table III, question 7a).

Repetition of the SOLP process, for truck bodies, provided insights into the learning curve for managers involved in the first process. One of the managers stated:

*'The first time we went through the process it was a journey of discovery...so it took up a lot of energy. The second time around we knew the whole process and so we focussed more on what we could get out of it. Obviously it is something you get better at the more you do of them.'*

An important part of the SOLP process is that facilitators remain quiet about solutions, allowing team members find their own way to the answer so that they own it. All the evaluation interviews indicated that ownership was achieved by the members (see Table III, question 7b). For example:

*All he (the facilitator) did was facilitate, he did not really bring his ideas into it, he just fed off the guys that were in there, .. so the ownership of the people who were involved was always there.*

From this, we argue that team members must find out the new directions and actions for themselves to understand and implement them.

The structure of the worksheets channelled the participation of team members. However, the focus provided by the structure was viewed favourably by the team. One commented:

*It had a very structured approach, a lot more structured approach to the way we would normally do things.*

We believe that there is a need to push people outside their comfort zones without suggesting solutions. For instance, where an articulate member of the team raised important issues, it was possible for the facilitator to highlight these and encourage discussion. An example, perhaps, of some team members trying to re-assert their comfort zones took place in the second process. At the last meeting the team collapsed the product groups from four to one. We see this action, which was promulgated by the marketing members of the team, as a manifestation of vested interest by those members. It raises the question "Should the facilitator permit this or oppose it?" SOLP is a democratic process, but if members alter the process, they may fail to get a good answer. In this case the facilitator asked team members to be careful, but did not block their precipitate action.

The Manufacturing Director had wider aims than strategic plan formulation. In the follow up interview he revealed he had two agendas in running the SOLP process:

*I saw the educational side as almost as important to me as improving the business processes we were looking at. I had two motives to get results and to get training. I saw it as 50% business improvement and 50% education of the people. One of my objectives is to train all my key people to a high level of competency.... I said " it is part of your training for the year".*

There is also a danger of 'not seeing wood for trees' in an organisation where you have worked for many years. A positive aspect of SOLP which counteracted this was the recognition by those involved that it was a major benefit to have members representing the complete supply chain present in the room. In particular, being confronted by a major dealer and one of his typical customers helped to shake team members complacency. Typical comments were:

*I saw the value as actually hearing from the customer and getting an understanding of what their requirements actually were.*

*I can't think of anything we have done previously that brought the whole supply chain together like that.*

We believe this discussion indicates that the SOLP approach has advantages over lean approaches (Womack & Jones 1996), which tend to analyse the existing scene in detail. This is not productive if managers need to take the supply chain, to a very different strategic area for future success.

The relationship with suppliers seems also to have improved as a result of the SOLP process. For instance the purchasing manager, talking about major suppliers of steel, said:

*They kept on referring back to their experience as a real positive...they talked about the alignment, customer needs and they articulated that as a real positive.*

A practical outcome of this improved relationship was the supply of steel on consignment.

Almost all of those interviewed stated that the SOLP process gave those involved a much clearer understanding of the roles and problems faced by managers in other company functions, who formed part of the supply chain (Table 3, Question 8). A typical comment was:

*Particularly helped our marketing people get a better understanding how we build the product.*

Better links between operations and logistics were noted by most of those interviewed (see Table 3, Question 11). However, the value of this improved understanding is only a percentage of those involved if they fail to create a means to pass that understanding to new managers. Such a knowledge structure could be provided by redesigning the organisation into product focussed groups as discussed above (Van der Zwaan 1999).

The research aimed to ascertain whether external help needs to be continued during the implementation of strategic plans. Several team members hold the view that such extra assistance is necessary for optimal implementation. However, some of the limited application was caused by the action plans requiring expenditure on capital equipment and staffing for which no budget resources had been allocated. Unfortunately, the budget cycle for the company required new bids to be in by October for the following year, which conflicted with the timing of the first process.

## **Conclusions**

From the above results and discussion it is apparent that a team of supply chain managers can formulate a strategic operations plan for a complete supply chain in a heavy industry. Responses to the question on what outcomes resulted from the SOLP process indicate some process improvements, in particular the agreement with suppliers to take steel on consignment. However, a lack of the necessary capital investment and increase in staff resources prevented full implementation (See Table 3). The dual motives, training and operational improvement, of the manufacturing director for engaging in the process did not help implementation. Further factors such as lack of financial and management autonomy in the company, lack of seniority and operations responsibility in non-manufacturer team members, lack of importance of the product groups chosen in the first process contributed to the lack of outcomes.

The responses to the evaluation interviews also indicate both an understanding of the value of SOLP and a frustration with the lack of full implementation. Further, the inclusion of members of all echelons in the supply chain increased the width and credibility of the strategic logistic plans derived. Almost all respondents believed that SOLP motivated managers to pull together and that results of the process were communicated to the management team (see Table 3, questions 8, 11 and 13). Together these answers support the finding that good logistic plans were derived by the process and members were encouraged to take part.

The interrelationship of SOLP with corporate level initiatives such as Class A show that the process was not the sole cause of the business improvements that did occur. However, in dealing with a small part of a multinational corporation rather than a stand alone company the existence of other change initiatives is to be expected. Responses from the evaluation interviews indicate that there were synergies between SOLP and the two other change processes.

Using SOLP for the first time in an organisation is more difficult than repeating the process, because of the lack of comprehension of strategic supply chain thinking by those involved. The facilitator did carry out another SOLP process at the same manufacturer with different product families. However, due to the presence of new members in the second process the gains of familiarity were not fully achieved.

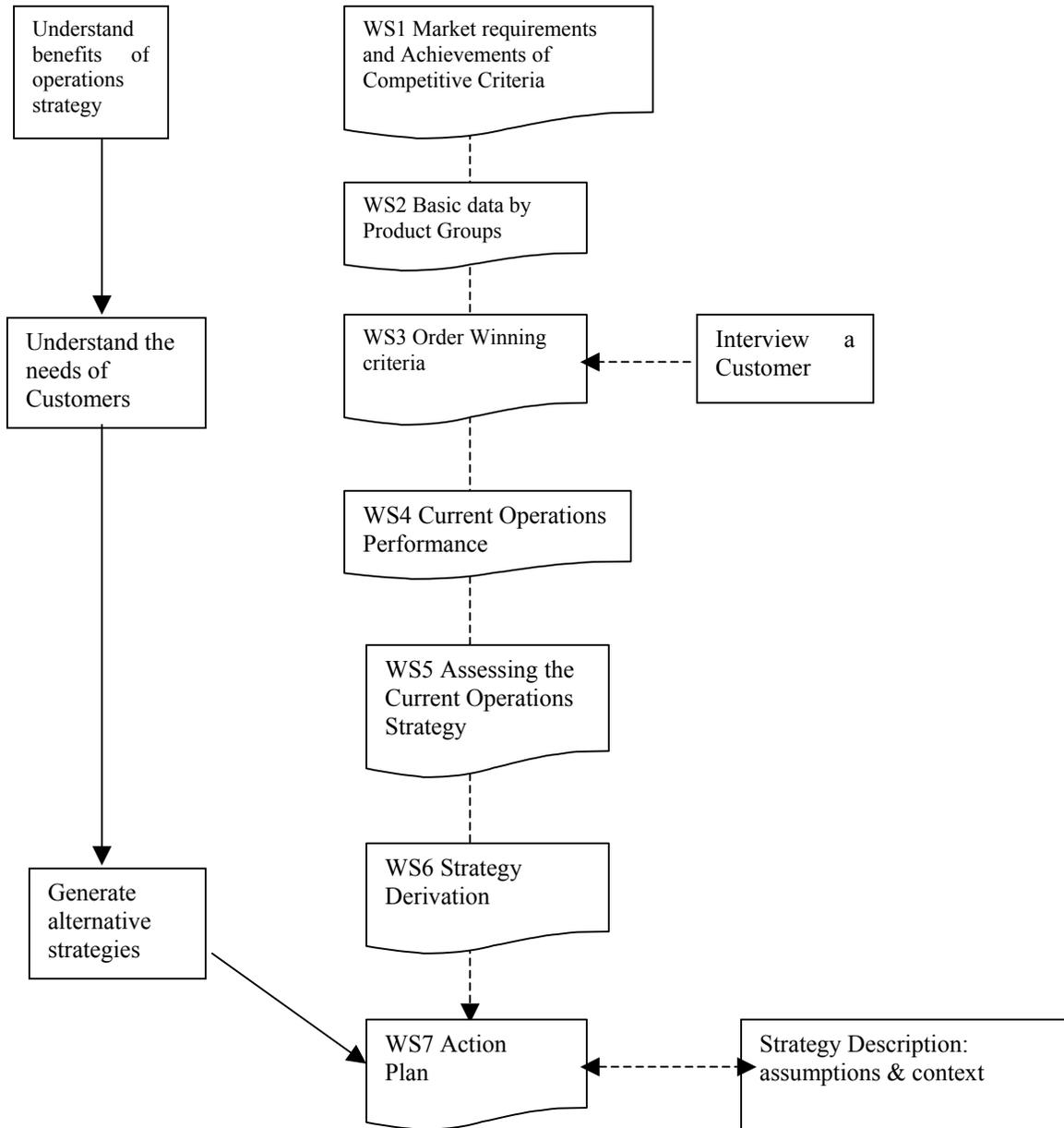
We argue that continuation of external help to implement strategic operations plans would improve the degree of implementation. This was not attempted, except for the involvement in the second SOLP process.

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33



**Figure 1.** Thinking and Worksheets in the SOLP process. Developed from Platts and Gregory (1990)