

SUPPLY CHAIN INITIATIVES IN THE AUSTRALIAN TEXTILES, FOOTWEAR, CLOTHING AND LEATHER INDUSTRY

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*Working Paper 3/04
March 2004*

**DEPARTMENT OF MANAGEMENT
WORKING PAPER SERIES
ISSN 1327-5216**



Abstract

This paper examines case studies on supply chain management (SCM) in twelve Australian textile, clothing and footwear industry companies. The companies were recipients of Australian government assistance aimed at enhancing supply chain and global competitiveness in the Textiles, Clothing and Footwear and Leather (TCF&L) industry.

The findings are similar to those in academic literature and government reports that an increased strategic and global focus by the supply chain needs to be supported by adequate information flow, appropriate value-adding processes, of suitable leading technology application and people-valuing and innovation-fostering company environment. Important too, for, company prosperity is continuous reduction of waste and cost. The findings further reflect the general instability of trading arrangements in the Australian TCF&L industry as companies, and hence the respective supply chains, adjust, not always with success, to global competition and a shrinking industry infrastructure.

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INTRODUCTION

Global competitiveness has been a clear theme of recent Austr TCF&L industry government papers and reports, along with expanded export activity and enhanced local market supply. A comprehensive government paper, *Towards 2010: The Action Agenda for the TCF&L Industry* (URL, 2000); made the point that the TCF&L industry was at a crucial point in its history. It identified an urgent need for the industry to respond strategically, 'with one voice' to the global competitive pressures that it faced. The report also identified areas of immediate enterprise attention as: leadership and management, supply chain management, innovation, market development, skills, education and training, information technology and strategic planning. The state government of Victoria, which normally implements a large part of the Australian government's TCF&L industry programs and also implements its own, similarly identified five key priority areas in its *TCF&L Industry Strategic Plan 2002* (URL, 2002). The areas comprised: increased global orientation of the industry, industry collaboration and promotion, creation of a more positive image for the industry, a more effective workforce and an innovative workplace.

Australian government-funded TCF&L programs specifically focussing on supply chain improvements have included the Quick Response Program of the early 1990s, the Supply Chain Partnerships Program of 1996-1997 and the Value Chain Partnerships of 2000-2001(URL, 2002). This paper examines the results of twelve companies that participated in supply-chain oriented government programs between 1996 and 2001. The paper is divided as follows: Part two provides SCM definitions and themes in recent literature; part three explains the methodology used; part four provides an analysis of issues addressed, action taken and outcomes. Paper ends with concluding remarks.

SCM DEFINITION

A review of recent literature on SCM demonstrates that the concept is complex (Govil & Proth, 2002; Petrovic-Lazarevic, Sohal, 2002; Taylor, 2001). The complexity of SCM is evidenced in the wide range of perspectives and theoretical frameworks found in journal articles and books on the topic. Recurring themes in recent academic publications are customer-supplier alliances, lean and agile manufacturing and logistics. Other frequently referred to themes include strategic planning, information and communication systems, e-business, organisational design and change management, inventory management and planning and control systems, performance assessment, decision support systems and reverse and environmental logistics (Sadler, Power & Dapiran 2002).

The supply chain concept itself is by no means a clearly defined one (Govil & Proth, 2002). It is presented variously as encompassing vertical chains, networks, collaboration, trust and openness, logistics, value adding, flexibility, e-business and applications of information technology. The multifaceted nature of the SCM concept reflects both the complexities of the supply chain and today's multi-dimensional management paradigms. Intercompany relationship building and networking are viewed as essential supply chain activity by a number of authors. For example, Cox (1999) stressed networks of companies, defining SCM as network of organizations in delivery channels that produces value for customers, and contributes to achieving and sustaining a competitive advantage. The Skjoett-Larsen (1999) definition of SCM focused on development of teamwork with common vision and similar long-term objectives, and development of an information system that leads to trust and openness between parties.

Womack and Jones (1996) and Cox (1999) emphasised lean thinking in SCM. Christopher and Towill (2000) discussed SCM in terms of collaborative relationship management, procurement and logistics effectiveness and efficiency at the operational level and stressed the growing importance of adding value through speed, flexibility and e-business.

Clearly, though, the breadth of supply chain literature, themes and definitions highlight the significance of SCM in today's business world (Lummus & Vokurka, 1999; Ayers, 2001). Additional complication in SCM is that its actual scope lacks common agreement. Fawcett and Magnan (2002) found that whilst most respondents considered SCM to be an important part of their business strategy, their definitions of SCM fell into four categories. These were: first, 'internal, cross-functional process integration', second, 'backward integration with valued first-tier suppliers', third, 'forward integration with valued first-tier customers' and fourth, 'complete forward and backward integration' which was rare in practice. Further, Fawcett and Magnan argue that most organisations are at early stages of inter-company integration. In recognition of the likely variance of viewpoints on the scope and application of SCM in the TCF&L research, data collection concerned in-house supply chain initiatives and activities relating to its government-program first-tier supplier and customer. The approach combined Fawcett and Magnan SCM categories three and four. This was in line with the usual three-company supply chain focus of the government supply chain programs.

METHODOLOGY

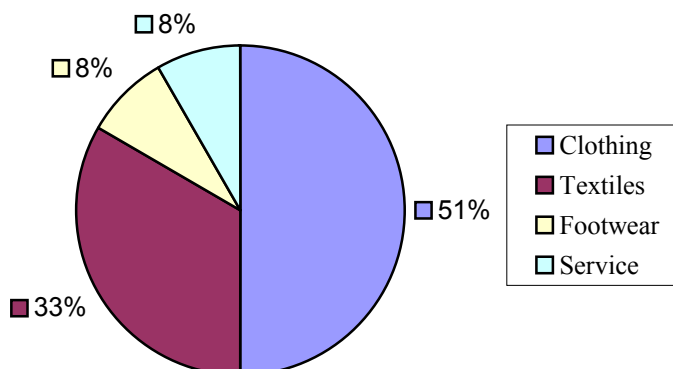
The research project was conducted in two phases over the two-year period 2001 to 2002. Phase one comprised manager interviews and data collection and phase two concerned data pattern analysis and the relating of findings to TCF&L industry government objectives and SCM theory.

Twelve case studies were compiled through interviews with company managers and available consultants who had been involved in the supply chain program. It was considered important that the research project reflect the managers' views of their supply chain scenario and its inherent features and challenges. The case study was selected as an appropriate methodology for this purpose and for its contextual realism (Willig, 2001). Limitations of the open-ended question method include variance in level of detail provided and the skipping of the interviewee to issues of primary concern as opposed to completely addressing a question. Furthermore, data-collection time constraints and goodwill concerns prohibited prolonged interviewee follow-up. Nevertheless, through the examination of the rich array of data collected under the research categories of this study, data relationships and trends in practices have been discernable.

The interviewed managers were all decision makers within their companies and were hence in a position to implement requisite changes discussed in supply chain meetings. The data-gathering research process was both inductive and deductive, applying exploratory research methods through the open-ended interviews and then comparing the findings with published supply chain theory and Australian government report recommendations. All of the interviewed managers were, or had been involved in recent supply chain improvement activities as part of one of several Australian government industry-assistance programs. The government assistance programs normally included company funding for process-improvement, industry consultant support and usually a series of intercompany supply chain meetings or workshops, depending on the nature of the problems being addressed. The companies' supply chain activities were categorised in terms of incoming supply, production and outward delivery, for ease of analysis and discussion. Further sub-categories concerned supply chain issues to be addressed, action taken and the results of company intervention.

The study sample (See Figure 1) was a near representation of the current Australian Textiles, Clothing Footwear and Leather industry sector make-up, comprising six clothing industry companies, four textile manufacturers and a footwear producer. Although not directly represented, leather processing was an important part of the footwear company's supply chain activity. Indeed, the quality of the leather was a major supply chain issue. The interviews were semi-formal, with each manager responding to a set of open-ended questions. Information was collected concerning company background, the company's external marketplace, planning activities with supply chain partners and areas identified in the company for supply chain improvement (in terms of supply, production and/or delivery). Further information concerned company action taken to improve the supply chain situation or general competitiveness, outcomes of action taken (again in terms of supply, production or delivery) and the future outlook for the company.

Figure 1: TCF&L Sector Representation for the Twelve Case Studies



RESEARCH FINDINGS

In this section the case information is examined, focussing firstly on the in-house issues that were addressed through the government programs and secondly on the general TCF&L industry and supply chain issues. The information obtained through the case studies is valuable by being presented by managers close to the supply chain situation. It is also rich by bringing into play each manager's perspective of their own working environment and their identified supply chain's functioning.

The twelve case studies' findings are grouped as in-coming supply, in-house production, out-going delivery to customer and aggregate issues related to TCF&L. There is some overlap in the categorisation, given that activities in one part of the chain may impact significantly upon another, or work co-jointly, as for example, in the case of production quality impacting on product quality which in turn may impact on sales. In this study, sales have been included in the out-going delivery category because of the related association with the customer and with delivery requirements.

In-Coming Supply

Focussing on the in-house company activities arising from the government supply chain programs, the most commonly expressed concern regarding suppliers was late deliveries, which, not surprisingly, tended to flow on to late deliveries to customers. Half the companies in the study indicated room for improvement in supply. Four companies reported late in-coming delivery as an area for improvement, one clothing company cited supplier product quality as a problem area and two companies reported that they recognised a need to improve their relationship with their supplier. The latter two companies also had difficulties with in-coming supply or Delivery-In-Full-and On-Time (DIFOT) (See Figure 2) (Perry, Sohal,2000).

Communication initiatives related to supply improvement activities were implemented in five of the six companies reporting areas for supply improvement (See Figure 3).

Figure 2: Areas for In-coming Supply Improvement

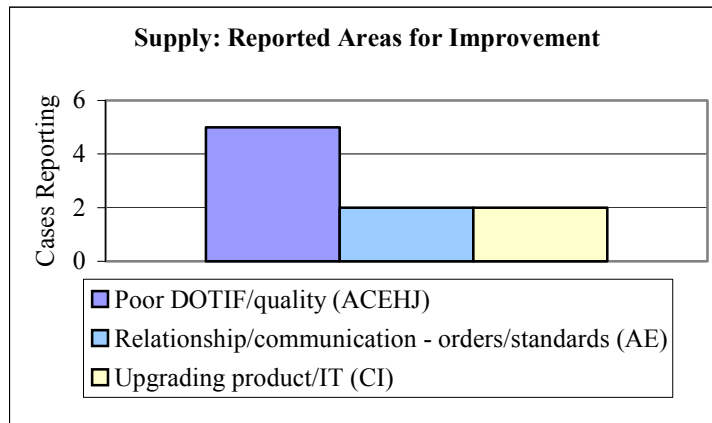
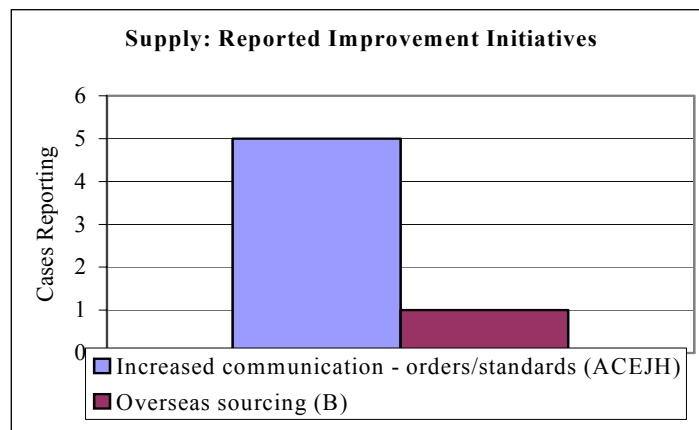


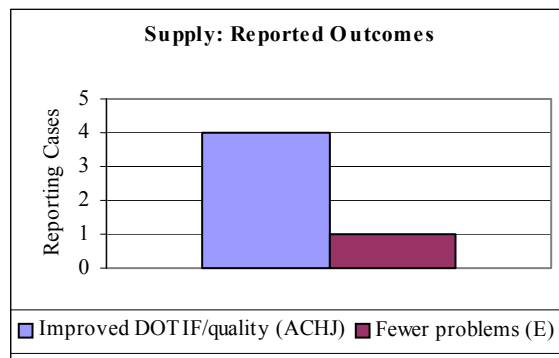
Figure 3: In-coming Supply Improvement Initiatives



It is noteworthy that all the companies reporting DIFOT, communication or relationship problems with suppliers actually increased their levels of communication with their suppliers during their period of involvement in supply chain program, with overall beneficial outcomes. In fact, all the companies reporting increased communication with suppliers reported beneficial outcomes in terms of: supplier delivery DIFOT (two companies), improved ability to produce a quality product (two companies) and avoidance of former problems (one company).

Figure 4, which depicts a summary of the outcomes of the initiatives compressed into two categories, namely improved delivery/ quality and fewer problems, shows that the reported issue of poor supplier delivery or quality by five companies was clearly addressed in four companies, with fewer problems in the fifth case. It can be surmised that the reported increase in communication with suppliers by the five companies led to better-informed and smoother supply, and was hence linked with improved supplier delivery and fewer problems.

Figure 4: Reported In-coming Supply Outcomes



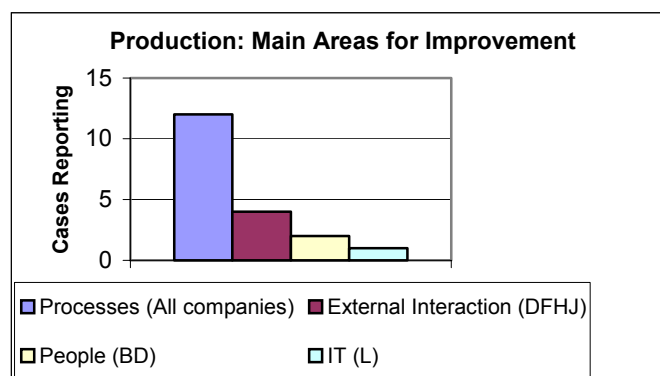
From the discussions with company managers and data collected, it can be surmised that the reported increase in communication with suppliers by the five companies led to better-informed and smoother supply, and was hence linked with improved supplier delivery and fewer problems.

In-house Production

The aggregate group of interviewed managers expressed concern about a wide range of in-house production issues. One clothing company admitted to poor in-house communication and saw the need to address this issue as a priority. However, the most frequently reported areas for improvement entailed non-value-adding steps in production, lack of agility, capacity, product quality and outdated machinery. Most of the reported problems concerned production inefficiencies and can also be categorised as non-value-adding issues. Reported problem areas such as slow production, accumulation of work-in-progress, long set-up times, inventory-build-up, waste, long lead-times, high material handling costs, scheduling inefficiencies, lack of accountability and outdated information systems are all associated with value-loss and lessened competitive performance.

Analysis of the production-related areas for improvement clearly shows that process-related concerns predominated (See Figure 5).

Figure 5: Main Areas for Production Improvement

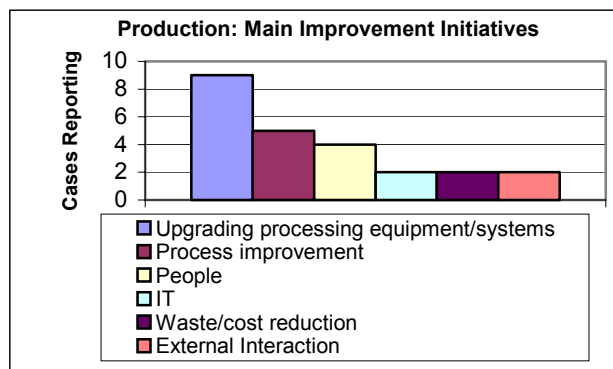


It is evident that all the companies saw the need to improve their internal production processes. This reflected a relatively high level of production shortcomings in the industry at the time, but also a general desire to redress the shortcomings in order to become more effective and competitive. A clear finding

relating to production-improvement initiatives was that half of the companies in the study invested in more flexible machinery to improve production agility and responsiveness to customer requirements. Three companies implemented quality accreditation initiatives, two installed Enterprise Resource Systems, two initiated Electronic Data Interchange (EDI) implementation and a further two companies focussed on setting and reaching Key Performance Indicator standards on a range of production-related parameters. Improvement initiatives relating to the workplace environment were evident in a number of companies. There were two examples of companies setting up more collaborative team-based systems to encourage innovation. In addition, one company improved job descriptions and another involved employees in a change program. Another company facing a demand-downturn introduced job sharing and reduced shifts in order to avoid immediate employee lay-offs. Further scrutiny of the improvement initiatives showed a focus on the upgrading of equipment and systems. In addition, five out of the twelve companies set about improving processes and four out of the twelve concentrated on attending to the workplace environment. Two companies were attending to external environment interactions, two were implementing an IT EDI facility and two were focussing on waste or cost reduction.

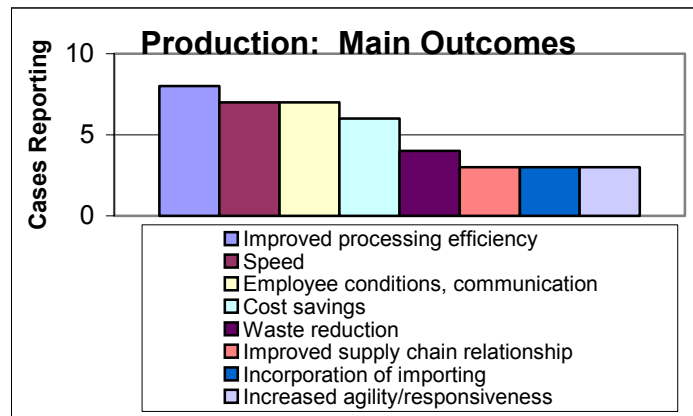
Figure 6 shows the predominance of process and system upgrading activity that occurred as part of the supply chain programs, where matching government funding was provided to make internal improvements. Obviously, this activity was meeting the overall need in the industry to upgrade equipment. Process improvements took place in almost all the companies and people-centred improvements were implemented in a third. Production initiative outcomes varied widely between companies. For each company there was at least one beneficial improvement. The improvements included upgraded systems such as CAD/CAM, new machinery, key performance indicators, quality procedures, and better capacity arrangements. Cost savings were reported in half the companies. The observation is made that only four companies reported involving employees in the change process through quality programs, innovation encouragement or a direct change management program.

Figure 6: Main Production Improvement Initiatives



Three companies ended up taking advantage of the government’s import replacement scheme to augment, or replace production with imported products in order to meet customer requirements (see Figure 7). They were thereby able to eliminate, or significantly reduce their production costs. Responses concerning the mostly beneficial outcomes were reorganised for analysis where there were at least two responses, into the following categories: improved processing efficiency, greater speed, cost savings, improved employee conditions and communication, increased agility/responsiveness, value-adding, employee conditions and communication improvement, incorporation of importing and enhanced relationships with supply chain counterparts.

Figure 7: Main Production Outcomes

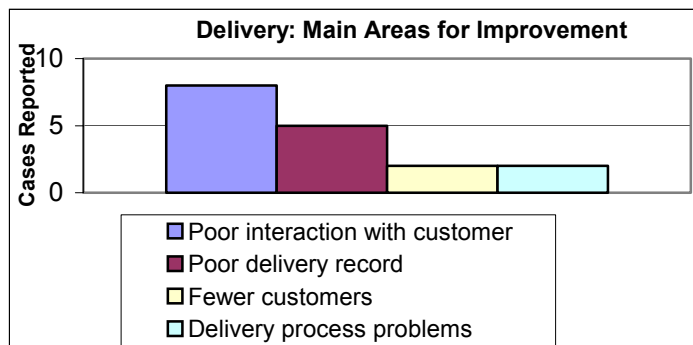


Analysis of the category groupings points to a high degree of process efficiency improvement, with improved degrees of processing speed. Cost savings were also noted in half the companies. Of note is the outcome of over half the companies reporting an improved internal environment with better employee conditions and a higher level of worker involvement in process decisions.

Delivery to Customer

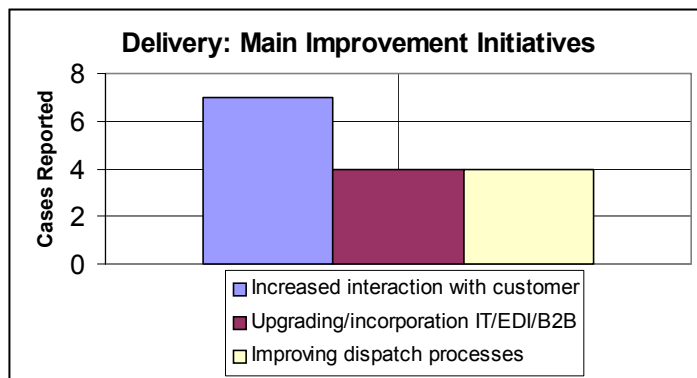
Areas identified for improvement in delivery-to-customer activity included delivery (five companies), an outmoded dispatch system, (one company) meeting customer standards (two companies) and managing the warehouse (one company). Assorted difficulties with the customer were also noted separately in four companies concerning such matters as a poor relationship, swings in customer demand, short order-notification and poor information flow (See Figure 8).

Figure 8: Main Out-going Delivery Areas for Improvement



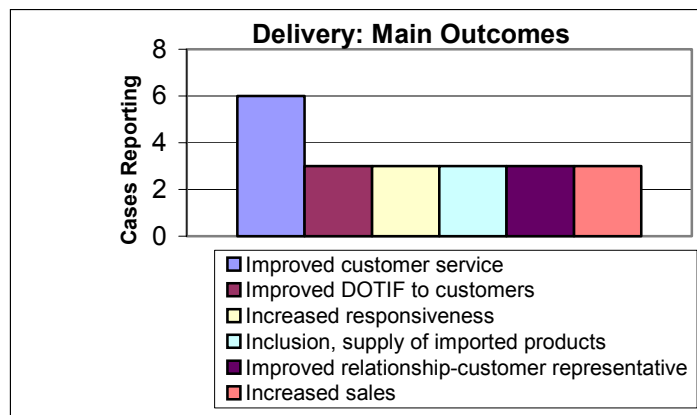
Concerning delivery-to-customer, the various initiated improvements revolved around the establishment, or clarification, of regular communication from the retailer of order requirements (See Figure 9). They also included the upgrading of electronic order notification processes, e-business and distribution processes.

Figure 9: Main Out-going Delivery Improvement Initiatives



Half the cases reported improved levels of customer service delivery with one company anticipating slight improvement in this area. Additional positive outcomes were noted (See Figure 10). They included three companies reporting improved DIFOT and a further three reporting increased responsiveness. Three companies had increased product sales and another two were anticipating sales increases. Furthermore, three managers considered that their relationship with their customer’s representatives had been enhanced.

Figure 10: Main Out-going Delivery Outcomes



TCF&L Summary of Major Findings

General TCF&L industry concerns raised by the interviewed managers were numerous. They included the shrinking business infrastructure underpinning TCF&L companies, the likelihood of losing customers’ business to overseas suppliers and the volatile dollar value and changeability of international trade. In the local arena the reported concerns included poor communication throughout the chain leading to widespread misinformation, retail power, with compliance stressed as opposed to win/win solutions, traditional industry fixation on price and lesser concern for quality and service and competition from local low-cost service providers.

Companies reported variously a more integrated chain, with increased sharing of production-related information, increased Internet business-to-business activity and greater electronic data interchange usage. It appears that there was much more inter-company understanding, cohesion and tolerance, with greater allowance of respective lead times and avoidance of production problems through communication of issues such as colour-matching at earlier points in supply chain. Increased or anticipated increased sales were reported, and one chain reported a total chain lead-time reduction of 25 days.

In terms of the companies' interaction with the wider marketplace, one company manager expressed the desire to build on the positive outcomes of the program and work more closely with other supply chains and another experienced a success flow-on into exports that rose well ahead of budget. Other managers expressed a need to make ongoing improvements to meet changing market requirements. One clothing manufacturer changed over to fully importing, following a common trend in the industry, and for one company the trust relationship had been broken and it was left cautious about providing cost transparency to a customer.

A need for improved communication and engagement of people in all twelve companies was evident throughout the supply chain, both between supply chain companies and internally. Overall problems concerning poor supplier DIFOT, poor product quality and low-tech systems of communication were addressed through inter-company discussion, or alternatively, through overseas sourcing. Production problems were common and were addressed by replacing outdated equipment, making use of appropriate technology implementing quality standards and procedures, encouraging employees to becoming more innovative and concerted reducing lost value and costs. A key delivery-to-customers issue was DIFOT. It was clear that many of the companies should make improvements in this area in order to maintain business with the customer. This issue was successfully addressed by some of the companies approached. Poor communication and relationships with customers was also an area that needed urgent attention in several companies. Once had addressed as part of the supply chain program activities, those companies were able to clarify their position, set clear objectives and set about improving the business requirements and relationship (See Table 1).

Table 1: Summary of Major Findings

Main Areas for Improvement		
<i>Supply</i>	<i>Production</i>	<i>Delivery</i>
Poor DIFOT/quality Relationship/communication - orders/standards Upgrading product/EDI/IT	Upgrading processing equipment/systems Process improvement Employee conditions and involvement IT and EDI implementation Waste/cost reduction External interaction	Poor level of interaction with customer Poor delivery record Fewer customers Delivery process problems
Main Initiatives Implemented		
<i>Supply</i>	<i>Production</i>	<i>Delivery</i>
Increased communication - orders/standards Overseas sourcing	Process improvements (all companies) External interaction Involving people Innovation climate Use of technology	Increased interaction with customer Upgrading/incorporation IT/EDI/B2B Improving dispatch processes
Main Positive Outcomes		
<i>Supply</i>	<i>Production</i>	<i>Delivery</i>
Improved DIFOT/quality Fewer problems	Process improvement Speed/responsiveness Employee conditions, communication Cost savings Waste reduction Improved supply chain relationship Incorporation of importing Increased agility	Improved customer service Improved DIFOT to customers Increased responsiveness Inclusion/supply of imported products Improved relationship-customer rep. Increased sales
Some Negative Outcomes		
Main customer sourced product/service elsewhere (2 companies) Lack of trust in supply chain – information used to other's advantage (1 company) Later in financial difficulties from lack of local business (2 companies)		

On balance, the main identified areas for improvement concerned inadequate communication both internally and externally with supply chain partners, outdated and inefficient production equipment, ineffective processes and poor supplier and downstream DIFOT (compounded by production inefficiencies and poor communication). Communication problems were addressed, sometimes during the course of supply chain meetings, through increased interaction with suppliers and customers. Internal interaction also increased and a more innovative environment was fostered. Much effort was put into process improvement and the replacement of old equipment in order to increase agility and product speed-to-market.

The intervention outcomes generally entailed reversals of the problem areas. It needs to be pointed out that many of the improvements were incomplete at the time of the study, so further improvements were expected, with the exception of the two companies now facing difficulties in their local markets. Improvements included improved supplier and downstream DIFOT, better customer service and improved information sharing, internally and externally. These were underpinned by more updated equipment, a high degree of process improvement, implementation of IT-based systems and also by improvements in employee conditions. Cost savings were occurring in the production and delivery areas, with a concerted effort in some companies to eliminate non-value-adding activities and reduce costs. Two of the companies still appear to need to substantially improve their DIFOT to customers, and a further two are still in the process of upgrading equipment.

Some negative findings for the case study companies included two of the companies being in financial difficulties, the customers of two companies taking their business elsewhere, with one of the company managers expressing a regret about trusting a customer who used shared information to get a better deal elsewhere. On the local retail-supply scene, with its history of retail dominance and supplier compliance, poor supply chain communication has been an industry feature. The study findings indicated that the thriving companies were implementing combinations of improved inter-company and internal communication, investment in new, more efficient equipment, value-adding production processes waste reduction, engaging employees in quality assessment and the development of innovative solutions to problems and investment in advanced technologies and systems.

CONCLUSIONS

The findings of this study do highlight some of the difficulties of SCM. It is apparent in the aggregate findings that there was an extent of distribution focus as opposed to whole chain focus and that there was little mention of alliance guidelines or monitoring apart from meeting customer standards. Furthermore some evidence was found of a lack of: internal process integration; external trust; integrated information systems and e-commerce linking firms. Improvements were still required amongst the aggregate group to accelerate the growth of SCM activity.

Fundamental make/buy, import/export and location decisions have been problematic in the face of an increasingly less protected competitive environment, the likelihood of losing customer business to overseas suppliers, a shrinking business infrastructure to support TCF&L companies and dollar value volatility making export returns unreliable. It appears companies need to constantly assess their competitive position. Should they, for example, focus on overseas markets or do they solidify local supply chain relationships, or do they do both?

On the local retail-supply scene, with its history of retail dominance and supplier compliance, poor supply chain communication has been an industry feature. It is apparent too, that suppliers were sometimes not highly evident in the supply chain program activities.

The study findings have clearly shown thriving companies addressing inter-company and internal communication issues, investing in new, more efficient equipment, value-adding and improving production processes, engaging in waste reduction, encouraging employees in quality assessment and the development of innovative solutions to problems and investing in advanced technologies and systems. The reported shrinking TCF&L business infrastructure was a major concern for the TCF&L manufacturing company managers. In an industry that had reduced by more than a third in light of government lowering of

protection, an increased global focus has become imperative for the surviving companies. It can be argued, though, that in certain cases, local production to local customers could be of mutual benefit to TCF&L companies and help maintain a critical local mass to support the industry. Rather than focus so much on price, local customers, particularly retailers, need to assess the full potential value of local manufacturing providing quality, service, product differentiation and quick response, leading to fewer subsequent sales markdown losses. The markdowns are normally mainly of large-order imported goods that are no longer in demand.

An immediate improvement put into practice by the supply chain groups included the supply chain meetings stipulated by the government programs. In the workshops the attendant senior managers were able to address, strategically and in a more informed way than usual, supply chain issues such as bottlenecks. Other issues addressed included commitment to greater cost transparency in the chain, product development collaboration, streamlining communication through e-mail and weekly electronic sharing of information such as sales and forecast data. Additional initiatives included bringing relevant company representatives into selected workshops and involving the customer in production planning. The outcomes of the regular supply chain meetings and workshops were, in the great majority, beneficial to the companies in the study by enabling them to better meet their customer's requirements in an environment of greater collaboration and understanding. Positive outcomes included increased appreciation of other supply chain member's difficulties, reinforced inter-company relationships and some bottom-line benefits, with more anticipated.

In spite of the industry volatility, there is a global competitiveness need for more strategically oriented, better informed, yet adaptive TCF&L supply chains with effective relationships, enhanced information flow and increased understanding of member companies' constraints and product requirements. And, where local suppliers must normally comply with strict delivery requirements to the major domestic retailers in order to maintain preferred supplier status, smooth delivery facilitation by all chain members to the end retailer is a strategic chain imperative. However, companies must constantly assess their own competitive position, given the volatility of supply-chain arrangements in the increasingly global marketplace.

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