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QUICK RESPONSE SUPPLY CHAIN ALLIANCES IN THE AUSTRALIAN TEXTILES, CLOTHING AND FOOTWEAR INDUSTRY

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ABSTRACT

Agile manufacturing is complementary to Quick Response - an initiative initially developed for the textiles, clothing and footwear industry. Quick Response refers fundamentally to speed-to-market of products which move rapidly through the production and delivery cycle, from raw materials and component suppliers, to manufacturer, to retailer and finally to end consumers. This paper describes the processes that were occurring as part of the Australian government funded Quick Response program in the textiles, clothing and footwear industry. This included workshop meetings involving supply chain partners where selfish 'wish lists' were openly discussed leading to the development of common Quick Response goals and open communication.

The paper also presents a model of effective communication and multidirectional information flow necessary for Quick Response Supply Chain Alliances, Finally, this paper identifies the key factors that led to the successful outcomes from the Australian Quick response Program.

Keywords: Agile Manufacturing; Quick Response; Supply Chain Alliances; Australia; Textiles, Clothing and Footwear Industry.

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INTRODUCTION

Youssef (1994) and Burgess (1994) concur about the need for manufacturers to be flexible and to cater for changing market conditions through 'agile manufacturing'. Youssef (1994, p. 4) describes agile manufacturing as follows: "A manufacturing system with extraordinary capability to meet the rapidly changing needs of the marketplace. A system that can shift rapidly amongst product models or between product lines, ideally in real-time response to customer demands."

Burgess (1994, p. 28) cites Goldman and Nagel (1993, pp. 18-38) who assert that agile manufacturing's characteristics include the ability to produce low cost, low volume, high quality, customised products. From this description it would appear that agile manufacturing is complementary to Quick Response - "an apparel industry initiative intended to cut manufacturing and distribution lead times through a variety of means, including information technology such as electronic data interchange, point of sale scanners, and bar coding, logistics improvements such as automated warehousing and increased use of air freight, and improved manufacturing methods, ranging from laser fabric cutting to reorganisation of the sewing process into modular sewing cells." (Fisher and Raman, 1996).

Hence, Quick Response refers fundamentally to speed-to-market of products which move rapidly through the production and delivery cycle, from raw materials and component suppliers, to manufacturer, to retailer and finally to end consumers. The importance of supply chain partnerships for Quick Response was established clearly by writers such as Blackburn (1991), Hunter (1994), Lowson (1995), Parker (1989), Pugh (1991) and Ward (1994).

Burgess (1994) also links agile manufacturing with all of Skinner's (1969, pp. 71-84) long-accepted alternative competitive priorities of cost, quality, flexibility and speed, viewing it as requiring overlapping competitive strategies. While long-term strategic planning for competitive advantage is important, Quick Response requires companies to adapt to the strategic requirements of the supply chain. Quick Response strategic planning requires a considerable amount of input from the supply chain as a whole, which in turn requires a highly codependent, cohesive group comprising companies with complementary, customer-focussed goals.

In order for a Quick Response business strategy to work within a company, appropriate organisational structures need to be developed. Andrews (1992, p. 10) asserts that the implementation of strategy must include the development of "an appropriate organisation structure made effective by information systems and relationships permitting coordination of subdivided activities." Similarly, Cravens and Shipp (1991, p. 56) argue for the development of a viable business through strategic planning. They make reference to a number of performance considerations required of a competitive company. They stress that: "To achieve long-term competitive advantage, the firm must focus on critically important influences on customer satisfaction such as product quality, order cycle time, new product development time, customer complaints, and market position. These influences may increase short-time costs, but they are vitally necessary to the long-run prosperity of the firm."

The development of an appropriate structure to implement Quick Response may, however, present a dilemma to managers. There is a danger that in adopting a business strategy which includes the element of speed, the time factor for developing a long-term, workable structure may be downplayed. Perhaps a compromise solution is required for companies, trading off the benefits of thorough structural planning and implementation with the benefits of speed. Companies adopting a Quick Response strategy need to balance the elements of long-term competitive planning and adaptability to market requirements and supply chain alliances.

This paper demonstrates the beneficial effect on local competitiveness of effectively operating strategic, vertical alliances in the Australian Textiles, Clothing and Footwear (TCF) industry during the early 1990s. Following the implementation, between 1992 and 1994, of a government initiated and facilitated Quick Response program involving representatives of TCF industry supply chain companies, some notable competitive improvements were evident.

This paper outlines the processes that were occurring in the Australian Quick Response Program. A major part of the program were formally organised workshops revolved around early agreement on common Quick Response goals and open communication between all parties attending the workshops. These cooperative intercompany activities were supported by implementation of appropriate in-house action in the companies concerned. The paper also presents a model of effective communication and multidirectional information flow, drawn from observations of the workshop processes and discussions with participants, the application of which was fundamental to Quick Response effectiveness. The model extends existing notions of requisite communication and information flow in the Quick Response supply chain. Finally, this paper identifies the key factors that led to the successful outcomes. For example, one very important factor was joint strategic planning by the cluster groups towards the supply of specific targeted products.

THE RESEARCH FOCUS AND THE RESEARCH PROCESS

Despite the Australian government's change of heart in mid 1997 over their proposed complete phasing out by 2005 of protective import tariffs for textiles, clothing and footwear (TCF) , the Australian TCF industry remains vulnerable to overseas competition. For over a decade the Australian TCF industry has been going through a period of intense restructuring in order for locally-made products to become competitive with products from the rest of the world. The TCF industry has recognised that one way of increasing its competitiveness locally is to increase their customer responsiveness capability, thereby providing a speed-to-market edge over normally slower-moving imports. The Werner International Review of the Textiles, Clothing and Footwear Industries Development Strategy (1994), also refers to the importance for survival of TCF companies having a long-term business plan as opposed to a seasonal plan.

In order the improve the competitiveness of the TCF industry, the Australian government funded a program to assist the TCF industry raise its standards towards becoming more internationally competitive with the rest of the world. The Quick Response Program, as it was referred to, was conceived at a time when the Australian TCF industry suffered a major set-back, losing approximately a third of its manufacturing plant base and leaving thousands of workers unemployed, particularly in the clothing sector.

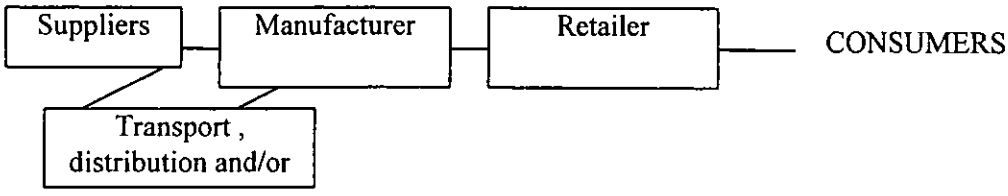
The key objectives of this program were to improve TCF companies' speed-to-market capability by:

- developing tight partnerships between cluster groups of retailer, manufacturer and suppliers; and
- assisting cluster companies to implement Electronic Data Interchange (EDI) technologies for improved sales information flow.

Fifty companies were involved in this project over the period 1992 to 1994. For the duration of this project, one of the authors was directly involved in the Quick Response Program. The authors also undertook audits of the companies to assess improvements taking place as a result of their involvement in this project.

The research process was multi-faceted. It entailed observation of the processes used in workshops held as part of the Quick Response Program, dialogue over a three year period with TCF industry leaders and government Quick Response officers and a comprehensive analysis of Quick Response-enabling practices that were being implemented in the supply chain participating companies. The supply chain in this case refers to the extended vertical business cluster comprising retailer (usually a large department store), manufacturer and suppliers to the manufacturer. (See Figure 1 which shows the typical components of a Quick Response supply chain cluster.) Where practicable, however, transport, distribution and packaging providers were also included in a cluster.

Figure 1: The Typical TCF Industry Quick Response Pilot Program Supply Chain



Permission was sought and granted by companies participating in the pilot program and the then State Department of Business and Employment (now known as 'Business Victoria') to attend and to observe a number of workshop meetings and to analyse detailed minutes of the meetings. The meetings were organised and facilitated by a government project officer who had spent a considerable amount of time liaising with supply chain companies and establishing the cluster groups. Typically, a cluster comprised a major retailer, a TCF manufacturer and one or two suppliers to the manufacturer. The cluster groups met for the purpose of mutual gain through improving their total effectiveness in servicing each other and the end consumer. Initially, the project officer conducted several meetings with the chief executive officer of each company in order to obtain their commitment to developing a cluster group, and to ensure their validity over the longer term. In addition, each company was required to develop a Quick Response wish list which was circulated to the other members of the cluster as a discussion starter for the first meeting. Therefore, each workshop started with members having some understanding of each others' concerns and the difficulties to be faced as a group.

The workshops were held in Melbourne at the offices of the State government. Over a two-year period, five supply chain groups were observed in a total of fifteen meetings. Minutes of workshops were also examined closely for general outcomes. Many informal discussions were also conducted with TCF industry leaders participating in the program, government Quick Response officers and appointed Quick Response consultants in order to obtain a variety of perspectives. The initial literature review had shown that typically supply chain communication flowed backwards from the retailer to the manufacturer (Blackburn,1991, p. 160). The concept of an extended supply chain operating cooperatively with interactive communication was reported rarely. Yet this notion emerged from the research as being highly important for Quick Response effectiveness (see Figure 3).

THE WORKSHOP PROCESSES

The cluster groups usually met on a two-monthly cycle to discuss cooperative strategies and tactics for implementing Quick Response along the supply chain. An examination of the workshop processes was conducted to ascertain procedural and interactive factors that appeared to be important for the development, cohesiveness and sustainability of the supply chain cluster groups. It was evident that the Quick Response supply chain workshop process established by Business Victoria was of considerable benefit to all the parties. Indeed, the overall improved communication and information flows were viewed generally as being linked to improved Quick Response performance. For reasons of confidentiality, individual companies are not linked with information given in this paper. However, it can be stated that in most clusters the same major retailer was represented. Table 1 lists all the companies participating in the total Quick Response Pilot Program.

Table 1: List of supply chain clusters in Business Victoria Quick Response Pilot Program

- Paddle Bros/TMG Australia/Michel Leather/Myer
- Calum/Diamond Cut/Target
- Diana Ferrari/Packer Tanning/Burrowes/Myer
- Fields Knitwear/Australian Country Spinners/Myer
- Florsheim/Austanners/Myer
- Trackerjack/CDA/Myer
- Oroton/Michell Leather/Myer
- Berkeley Apparel/Myer
- Gloweave/Myer
- John Brown Hosiery/Yarra Falls/Myer
- Palmer Corporation/Stevenson's/Travlon Trimmings/Myer
- Australian Dyeworks/Universal Knitting Mills/Swiss Models/Target
- Yarra Falls/Hysport/Duty Free Stores
- Feathertop Outdoor Clothing/National Textiles/Country Smart
- Vita Pacific/Target
- TMG Australia/Target
- Jones Stroud/Target
- Calum/Givoni/Myer
- Country Road/TMG Australia
- Tripler Trading/Myer
- Anna Fiori/Country Road
- Bata Shoes/Myer
- Clarks/Burrowes/Austanners/Myer
- Burlon/Yarra Falls/Target
- Treble AAA/CDA/KMart

From the examination of the processes in the workshops, four common procedures were noted. These procedures had been established by the Quick Response Pilot Project officers. They were:

1. circulation of participant 'wish lists' within each cluster group prior to the workshops;
2. discussion of the wish lists during the workshops and the development of group and company action plans;
3. the inclusion in each group of a consultant selected by the manufacturing company for assistance with in-house Quick Response implementation activities; and
4. follow-up strategic and tactical planning amongst the cluster group.

Participant's Wish Lists

Prior to the workshops, participants had been asked by the facilitator to develop selfish 'wish lists'. That is, lists of things they would like the supply chain to achieve in order to improve their own performance and profitability. These were circulated to cluster members prior to the initial roundtable meeting. Normally, the wishes listed by participants were what they either saw as shortcomings in their cluster partners, or what they believed could be achieved by better cooperation of the supply chain members. The wish lists typically contained requests for improved working relationships between the partners, improved response to customer orders and reduced pipeline waste and delay. It is contended that because the wishes were framed as challenges, they were thought of in a positive light, rather than as problems with negative connotations. For example, observation of roundtable meetings and workshops minutes revealed high cluster group acceptance of wish list items by the cluster group members and a desire to address the inherent challenges .

The retailers' wish lists were concerned mainly with having the right product on the shelf for their customers in order to maximise sales. They believed that better planning with their suppliers would improve in-full, on-time deliveries and lessen end-of-season markdowns. Specific points commonly raised on the retailers' wish lists concerned the achievement of weekly refills by the manufacturers as well as increased sales and stockturns. The retailers also wanted to see constant involvement of the manufacturer at the designing/ planning stage and on-going communication on product development.

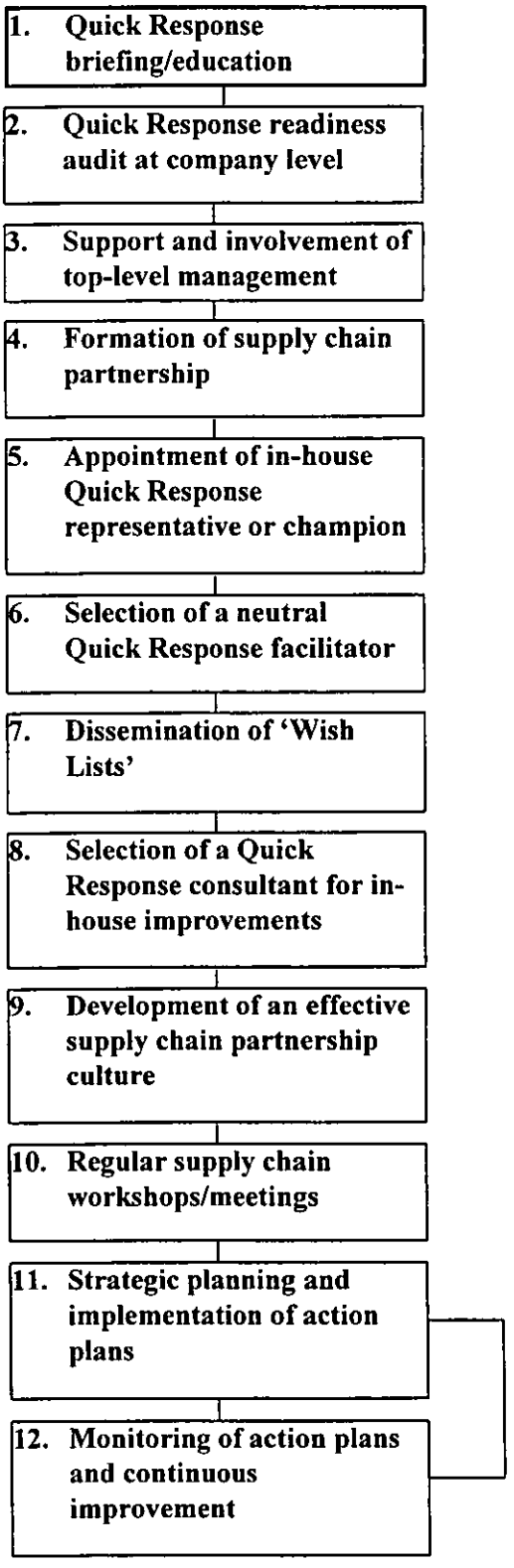
The manufacturers generally believed that some of the present constraints to in-full, on-time deliveries were in the realms of both retail and supplier operations. They regarded major constraints by retailers as being delays at the retail distribution centre, unscheduled changes in order quantity, delivery dates and product specifications and complex paperwork. For the supplier, the major constraint was seen generally as frequent long lead times which caused delays. Particular issues raised on manufactures' wish lists were the need for the supply of on-going retail sales data and forecast information (at least two months ahead) from the retail buyers. Weekly sales data updates were also requested, as was the holding of regular meetings to review a range of activities. The reviewed activities included sales, deliveries, forecasts, promotions, new product development and progress with new season's lines as well as quality control and cost reduction. The manufacturers also requested a reduction in paperwork from the retailer and wanted the adoption of more streamlined information transfer procedures including the implementation of Electronic Data Interchange (EDI). A common request was for faster movement of stock from the Distribution Centre (DC) to the retail shelf with less waiting time for raw materials from the supplier. Specific items raised by suppliers in relation to manufacturers concerned information sharing, provision of relevant on-going forecasts, constant order intake and their continuing involvement in new product development. They also wanted to see a reduction of the number of colours/materials in samples and ranges. Wishes common to all three groups across the clusters concerned joint planning, improved communication and increased information sharing.

A Quick Response supply chain partnership development checklist emerged out of discussions with the government Quick Response project officer and from the observations of the workshop processes in the program (See Figure 2) . The steps in the checklist were confirmed during informal discussions concerning 'the best way to develop a Quick Response supply chain partnership' with project officers, project consultants and company managers. Steps one to three encompass preliminary activities which need to occur at the company level prior to a partnership being formed whereas step four entails partnership activity. In the case of the Quick Response Pilot Program, the application of the entire twelve steps was very much influenced by the government project officer. Funding was only forthcoming once stages one to three had been completed in the companies concerned to the satisfaction of the TCF Development Authority. However, the government project officer did point out in informal discussions that in instances other than the government program initiatives towards partnership formation could be undertaken by any company in a supply chain.

Step five refers to the selection of a representative to attend the workshops and champion requisite in-house action to enable the meeting of supply chain goals. Steps six to eleven encompass the actual processes applied in the workshops, with step twelve combining the important processes of monitoring and feedback on progress that were also evident.

By focusing on the most common requirements first, the government facilitator was able to guide each group towards the development of purposeful mutually-agreed action plans. An intention was to avoid frequently voiced concerns that upstream suppliers were often in the dark about future orders and that they had to cope with high degrees of uncertainty and resultant peaks and troughs in production. It became evident during the workshops that the suppliers to the manufacturers were very much needed in the product planning stage, in particular, and that they were very much part of the Quick Response equation. In fact, extended parts of the supply chain such as transport and packaging were also identified for inclusion in some groups.

Figure 2: Steps to Quick Response Supply Chain Partnership Development



The most frequently proposed course of action entailed joint season-sales planning and coordination of activities between the partners. The rationale for this course of action was to ensure timely deliveries of initial orders and replenishment stock and to minimise waste and delay. Action to provide accurate knowledge of what was selling included frequently updated sales and forecast data at the retail end. Other action included the adoption of standardised bar coding using EAN (the European Numbering System) and the pre-packaging of products by manufacturers for the retail store shelf or peg. Furthermore, because the same major retailer was represented in four of the five groups, the action plan usually referred to the retailer's aim of 'having improved fill rates for both initial season's orders and replenishment orders'.

Selection of Consultants

The consultants were selected from a pool of consultants established by the TCF government office. Part of the Quick Response Pilot Program funding arrangement with the companies was the payment by the government of the selected consultants' fees for guiding the companies through the pilot phase of Quick Response implementation. The other part of the funding arrangement was dollar-for-dollar payment for the purchase of EDI software and hardware or for vital equipment to enable Quick Response. The consultants usually acted as observers, because their major purpose was to foster inter-company communication, information sharing and trust.

Strategic/Tactical Planning

Follow-up strategic and tactical discussions typically centred around action that had been taken, new initiatives that were being developed, Quick Response progress that was occurring and obstacles that needed to be overcome.

In all the groups observed, the follow-up action put into practice the activities outlined in the action plans. For workshop groups that had met several times and gone through the processes of wish list discussion, action plan development, and discussion of progress, typical actions involved formulating cluster group goals, achieving a state of joint product planning, actually sharing sales and forecast data and having much improved information flow throughout the chain. Empirical evidence supports a view that many of the clusters saw themselves as improving in Quick Response capability because of improved communication and information flow between partners (see later section).

THE IMPORTANCE OF COMMUNICATION

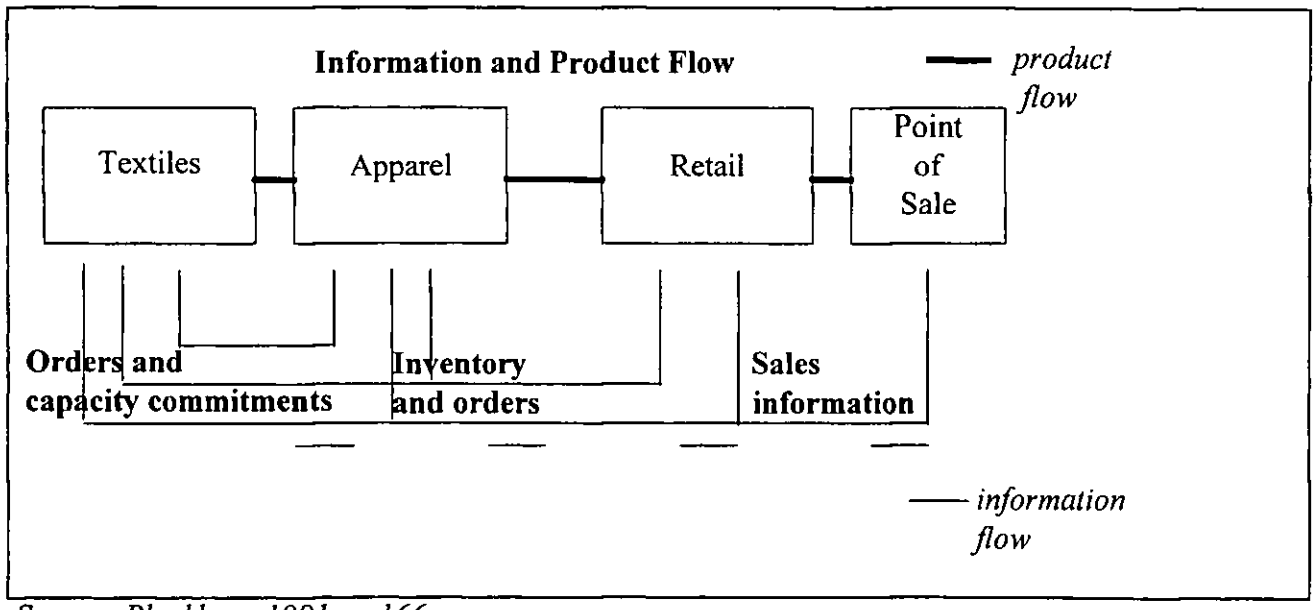
From an observation of the workshop processes, it was clear that the multi-directional, open communication that was occurring was of great strategic value to all parties. This finding extends notions in the literature of Quick Response information flow being necessarily backward from the retailer, as per Blackburn, (1991 p. 160). Certainly Point-of-Sale information flows backward from the retailer to the manufacturer, however, as a government Quick Response workshop facilitator pointed out during one of the workshops:

> *It is not the information that is important, but what is done with it, and any assumption by a supply chain partner that all the conditions exist at all stages of the supply chain for automatic replenishment on the basis of automated information transfer down the line may be a mistake.*

Through the workshop process a communication channel was opened up between the upstream raw material or component supplier and the retailer. In Australia the upstream supplier is frequently reliant on relayed information from the manufacturer and often forced to guess future orders.

Blackburn (1991, p. 160) found that the main direction of information flow in the supply chain is normally backward, whereas products flow forward, from raw materials to the consumer. According to Blackburn, (1991, p.160) there was a need to compress not only the forward product flow, but also the backward flow of information that is translated into replenishment orders. Blackburn's model of bi-directional flows of products forward and information backward is shown in Figure 3.

Figure 3: Two-Way Flows in Apparel Chain:



Source: Blackburn 1991, p. 166.

Blackburn's model was derived from observations and experience in the field. However, it was apparent that a change from the norm was occurring within the Quick Response workshops, because communication and information flow was occurring freely around and across the table. Furthermore, the communication net expanded substantially when representatives from transport, distribution and packaging attended the workshops. It was evident that all parties were benefiting from an increased understanding of how their businesses related to others in the supply chain. The upstream suppliers, for example, were particularly appreciative of being involved in discussions and able to advise the group about the achievability of particular product material options. What was happening in the workshops indicated strongly that improved above-the-norm supply chain communication and information flow was possible through the adoption of the procedures and methods of interaction advocated in the government program. Sometimes the upstream supplier had not met the retail buyer prior to involvement in the workshops. The workshops presented an opportunity to allay misconceptions and enhance understanding.

Traditionally the upstream TCF supplier has been severely disadvantaged by being out of touch with the retail buyer. As the timeliness, accuracy and volume of relayed information diminished along the chain, guesswork increased. As a result, suppliers were prone to order too much or too little in the way of raw materials. Worse still, a large order was sometimes placed for the wrong raw material, resulting in a substantial loss. The workshops, therefore, had the effect of improving the level of communication and decreasing the amount of guesswork at the upstream end of the supply chain. It was apparent to the Quick Response Pilot Program organiser and workshop facilitator, that the level of timeliness, accuracy and volume of information occurring through workshop activity was higher than the norm. With teamwork, regular meetings, increased knowledge of other partners' businesses, more focussed product knowledge and increased streamlining of information flow through EDI, improved communications was a clear result.

SUCCESS FACTORS

From observations of the workshop meetings, three interactive factors stand out as contributing to their success. The first concerned the existence of a positive problem-solving and opportunity seeking environment. Bailey et al (1991, pp. 259-263) view this environment as desirable for the effectiveness of working groups. The second concerned the involvement of a facilitator who was not aligned with any particular company and seen by all participants as being fair and impartial. Raimond and Eden (1990, pp. 97-105) also support this assertion. The third factor entailed the participants being senior level managers

who saw involvement as beneficial to their companies and who were in a position to make decisions and to give commitments.

The facilitator's style was encouraging, positive, affable and organised. At introductory meetings his leadership style was mainly that described by Hersey and Blanchard (1982) as a 'selling' style. However, during workshops his style became more that of a 'monitoring' or 'participating' style, guiding the group in the making of decisions. This change of style echoed a 'contingency approach' as prescribed for varying situations by Hersey and Blanchard (1982 pp. 150-171). Workshop participants tended to concentrate on eliciting top-down problem solving initiatives within clusters and firms - initiatives that were able to be effected quickly, without requiring large scale infrastructure changes and associated costs in the first instance. This initial process, witnessed in the cluster meetings, was an 'obstacle removal process'. Through this process the manufacturers built a more streamlined supply-line foundation on which to base strategic infrastructure changes, with less risk than in the past. As the workshops progressed, however, the focus did tend to change towards joint creation of new marketing initiatives.

A startling example of obstacle removal occurred in one of the initial workshop meetings. This was by no means atypical, and concerned a shoe production manager explaining to the group about the necessity for tying up production in making over two hundred shoe samples for the coming season because he thought he had to show all possible styles and colours to buyers. His two suppliers also talked about having to supply large numbers of samples of their products to the manufacturer. The three men were quite taken aback when the buyer present said: "We don't need so many colours, we are more interested in the styles". This interaction indicated a very poor level of supply line communication prior to the meeting on what was a crucial area - that of product development and the elimination of waste activities (Tidd, 1991, pp. 1-32). It also indicated that the parties had been 'doing what they had always done', perhaps out of habit or fear of losing business.

The outcome of this interaction was a resolution by all the parties to engage in on-going dialogue and joint product development. Reference was also made to using interactive Computer Aided Design systems in the future and to replace colour sampling. The outcome of the discussion was highly positive, with creative solutions to members' problems being explored by the group.

Invariably, the workshop discussions spilled over the allotted time of three hours and the members were keen to continue the discussion at a follow up workshop. Therefore, commitment to participate in on-going meetings was relatively easy to obtain. The usual difficulties associated with finding suitable meeting times for a group of busy working people did arise, however, and a number of workshops had to be rescheduled. This difficulty did prolong the workshop process, but was seen as unavoidable. However, the occurrence of meeting postponement did tend to diminish as the importance of the Quick Response meetings became increasingly apparent. The emphasis at the follow-up workshop meetings, under the skilled guidance of the facilitator, was on developing action plans towards Quick Response improvements along the supply chain.

It was considered important by the program leaders that the company representatives be from as high a level as possible. The reason for this was the need for high level commitment to the program and for the requisite high level decision making. In addition, senior managers were likely to be familiar with the Quick Response requirements. In many instances both the top level manager and the manager/officer immediately responsible for Quick Response buying, selling, delivery or production for a particular company were present at the workshops.

From discussions with program leaders and workshop attendees, the workshops were usually seen to be an outstanding success. Many creative improvements were initiated, within existing capabilities and with little direct cost to the participants. The workshops also served the purpose of cementing the cluster partnerships by building on participants' common interest in mutual growth by servicing end-customer requirements. A further positive feature was the fostering of trust and understanding amongst participants, through the team-building focus (Bailey et al, 1991).

The role of the program facilitator was crucial, and pointed the way to the use of impartial facilitators at supply-chain meetings in the future, beyond the Quick Response Program. This person, perhaps a consultant, needs to very carefully draw out the concerns of the participants, being aware, as far as possible, of the individual and company positions and the group dynamics. It is this person's task to galvanise the group towards becoming a viable problem sharing and solving team. This is not always easy when the communication lines between participants have either been non-existent (as was the case with a number of manufacturers, suppliers and retailers) or the communication lines have been limited, or when relations have been adversarial.

IMPEDIMENTS TO QR IMPLEMENTATION

While most of the discussion in this paper has concentrated on the success factors for Quick Response, at manufacturer level as well as along the supply chain, it is also important to understand the possible impediments to Quick Response success. From discussions with participants, several factors were reported as lowering levels of supply chain communication effectiveness. These were a lack of dedication of senior management, negative mindsets, or mindsets steeped in the traditions of mass production, power-based and adversarial relationships, lack of understanding of the businesses of other members in the chain and poor communication or interpersonal skills. These factors were not overtly evident at the meetings. Indeed, it was difficult to know or gauge the extent to which past difficulties in relationships were influencing the seemingly mostly positive workshop interactions that were being observed.

Some of the manufacturers did express a general fear about change away from a mass production system. At the time, one manufacturer saw an impediment to in-house re-organisation being a lack of prioritising of Quick Response activities by the company. Further impediments to Quick Response that were mentioned by consultants included difficulties associated with making cultural changes and production method changes, as well as an inability to meet the demands for information transfer and for tracking of raw materials and work-in-progress.

Concerning retail organisation, impediments to Quick Response success were seen as buyers making buying decisions based on first margin sales (price), rather than the total costs. Other retail-end impediments concerned either a delay in the provision of sales information to the manufacturers or Point-of-Sale (POS) scanning errors at the checkout. For example, different SKU items of the same product family being grouped together, rather than read separately, could result in incorrect SKU sales records. A further major impediment at the retail end was the fact that the retailers still generally needed large-scale restructuring in practices and systems to accommodate Quick Response. They also needed to develop a well defined and visible Quick Response culture.

From the previous discussion of the interactive processes taking place in the workshops, it can be deduced that there were a number of factors that contributed to efficient supply chain communication and information flow. The role of the facilitator was of primary importance as was continued senior management commitment. Perceived win/win outcomes amongst the participants were important, as were the attitudinal components of trust, a willingness to seek to understand the other businesses and overcoming cynicism. External factors included company viability and continuing suitable environmental conditions.

BENEFITS OF THE QR PROGRAM

The outcomes of the project were very positive in terms of increased sales and improved profitability. A longitudinal study (Perry, 1996) of practices occurring in the participant companies over the period of the implementation of the Quick Response program showed significant positive changes (See Table 2.)

Table 2: Significance of changes in levels of performance

Measure	'Before' Mean of all resp. (n1 = 26)	'After' Mean of all resp. (n2 = 26)	Percentage increase or decrease	One-tailed significance from pairs t-test	A significant increase or decrease in appropriate direction
Quick Response Sales ($Aus million)	1.1	2.1	90.0	.003	✓
Percentage of business conducted with the immediate customer	8.0	16.0	100.0	.000	✓
Percentage of orders arriving by the due date	53.0	92.6	74.0	.000	✓
Inventory turns of finished goods	8.0	16.0	100.0	.000	✓
Percentage of product rejects	2.5	2.1	(16.0)	.022	✓

Notable examples were in the key competitive performance areas of: 'orders by the due date' increasing from a low 53% to a high 92.6%; 'Quick Response sales revenue' almost doubling from $A1.1 million to $A2.1 million; 'business conducted with the immediate customer' doubling from 8% to 16 %; 'inventory turnover' also doubling from 8 to 16 per annum; and 'level of product rejects' reducing from 2.5% to 2.1%. For the majority of the participating companies, there were also markedly improved levels of customer satisfaction.

The following Quick Response comments were gathered from the minutes of the workshops. They show an appreciation for resultant improved relationships and beneficial outcomes for companies. These highly positive comments do need, however, to be considered in the light of participants perhaps praising the program for a number of altruistic and private reasons. One reason might have been their gratitude to the government for financial support. Another may have been their desire to increase business with the supply chain partners and yet another may have been simply the group dynamics of the positive environment created by the facilitator (Robbins et al, 1994, pp. 421-452). However, the statements below are typical comments:

> *Rapport with our trading partner has been enhanced out of sight. Both sides now recognise their shortcomings in dealing with each other and we are working as a team to create improvements.*
>
> *The positive attitude towards partnering between the two managements has given the strongest links ever, which reflects in much better working relations and trading. This enthusiasm has carried through to the shop floor.*
>
> *Our ability to plan production has improved greatly. We have halved delivery times, vastly improved dissemination of sales, marketing and production information to all parties, increased sales and virtually eliminated dead stock.*

The program will give us an advantage over importers by improving new product development procedures and increasing our ability to react to industry trends and retailers' requirements. We will be able to bring our new range forward by two months as a result of the program.

There is potential for increased sales as a result of involving the retailer in the product design and forecasting stages.

It is also evident from the workshop minutes that some common guarantees were given by retail buyers, clothing manufacturers and textile manufacturers. Some typical examples were, in the case of retailers to manufacturers, early advice of retailers' forecasts and prompt and regular feedback of sales data. Notice was being provided of labelling and packaging requirements and assurances were being provided that stock would be placed on shelves immediately upon delivery. An outcome of the guarantees was a steady increase in orders and subsequent sales.

Improvements were also occurring between clothing manufacturers and retailers regarding levels of liaison about carton bar-coding and premarking. For example, an investigation was undertaken by one manufacturer, in consultation with the retailer, into dispensing with invoices to the retailer and relying more on EDI. Examples of guarantees from clothing manufacturers to suppliers, were the provision of adequate notice of trim and label requirements, the holding of an investigation into reduction of colour ranges and an increase in lot size.

In the case of textile manufacturers supplying clothing manufacturers, a commitment was made to provide early advice of vacant timeslots in dyehouse production schedules. A further commitment was made to translate retailers' forecast sales data into fabric weight, yarn count and colour.

The fulfilling of these guarantees between supply chain partners facilitated a cooperative spirit. The guarantees are indicators of commitment to streamline the activities along the supply chain in direct response to what was selling in the retail store. An interesting point to note is that almost all of the above guarantees involve a commitment to on-going communication and information flow between partners.

The issue of EDI implementation, considered highly important for QR success in the writings of USA Quick Response initiators Kurt Salmon Associates (1989), was being handled mostly on a case-by-case basis by the consultants attached to the program, because of the specific technical expertise required. The consultants attended the workshops and communicated regularly with the Quick Response Pilot Program team, informing them of EDI implementation developments. Furthermore, EDI implementation, towards full integration across a range of functions, was occurring steadily within participating companies.

The overall success of the Quick Response Pilot Program was based largely on its supply chain relationship focus, accompanied by its team problem solving approach and dedicated facilitator leadership. The program objective of improving supply-line response rate to customer orders was achieved in many cases as a result of both creative workshop input and consultant support with EDI implementation.

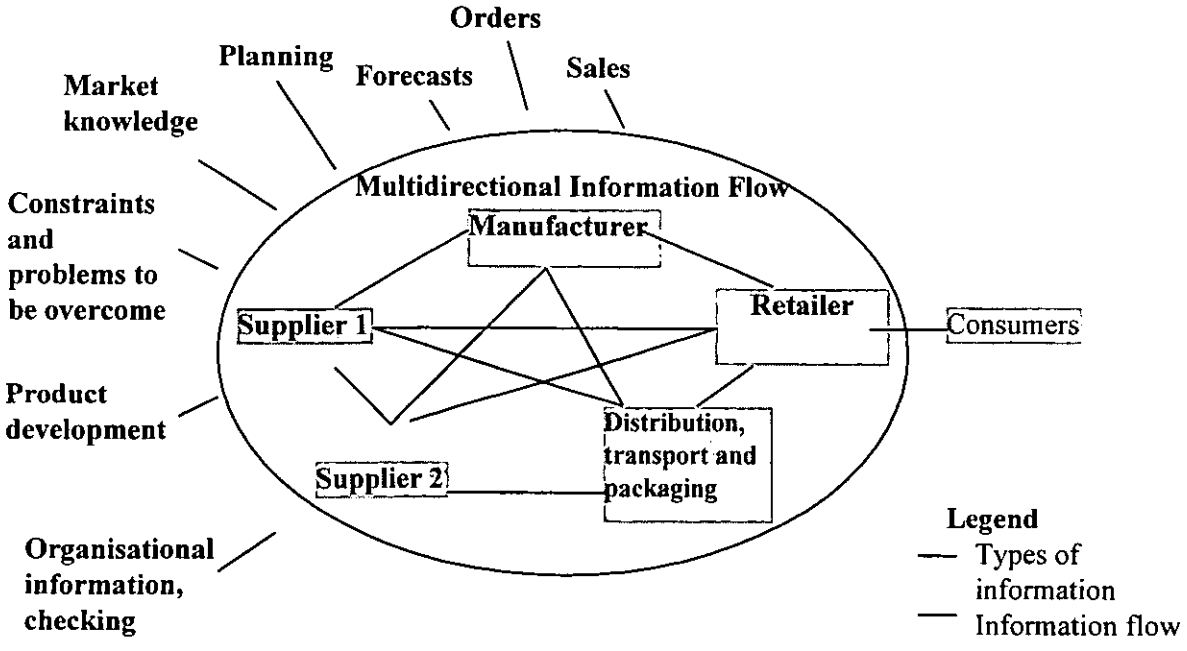
CONCLUSIONS AND IMPLICATIONS FOR QR THEORY AND PRACICE

The workshop processes, both procedural and interactive, were significant contributors to the success of the Quick Response Program. Because of the program's success, it has been replicated by the Australian government in the furniture and furnishings industry. The workshops played a vital part in creating an appropriate climate for efficient customer-focussed product movement to occur.

With regard to information flow (see Figure 4), multi-directional information sharing (as opposed to information flow) emerged as being crucially important. The notion of multi-directional information sharing builds on the Blackburn (1991) conceptual model which emphasises backward information flow (see Figure 3). The Quick Response workshop process facilitated multi-directional information sharing between all the

partners through the discussion of wish lists and strategic planning aimed at the formulation and implementation of product-related action plans.

Figure 4: Information Sharing in the Supply Chain



Participants' comments clearly showed that the communication that occurred in the workshops had improved manager's understanding of their own businesses, their partners businesses and the interrelatedness of all businesses in the chain. There was also a greater understanding of the Quick Response market and a commitment to explore joint opportunities. The multi-directional information sharing was patently an improvement over the uni-directional information flow backwards along the supply chain that had prevailed previously. However, at times when the partners were not meeting, backward information flow in the form of sales and forecast data needed to continue, but in a more user-friendly format for each company. For example, Point-of-Sale (POS) sales data, in an agreed format, would be transmitted electronically from retailer to manufacturer then converted into component or raw material requirements and transferred to the suppliers. When agreed to by all the partners, particular information relating to probable future orders would be transmitted. An example of this was, in the case of shoe manufacturing, the early indication from the retailer to the manufacturer, then to the leather supplier of the type of leather required for a particular style. That information would be followed by notification of the required colours, followed by the volume required, followed by the styles required, followed by the numbers of various sizes required.

Concerning information flow to and from the consumer in the Quick Response Program, the retailer was the main source of contact with the end consumer. Most of the information concerning sales was obtained through POS data collection, but this still had to be checked by examining the floor stock because of the possibility of scanning error. The most common error was that of a Stock Keeping Unit (SKU) item being scanned and the repeat button being pressed for a slightly different SKU. For example, this might occur in the case of two pairs of socks of the same colour but of different sizes.

Most of the information flow between the end consumer and the retailer was backwards, in the form of sales data collection, with some forward flowing information in the form of sales and promotion advertising. Two way communication between consumers and sales staff also flowed more in the large department stores that still had individual service as opposed to check-outs where communication was minimal.

Quick Response product information needs to be readily available to the supply chain partners, and the exchange of information must be carried out in an effective and mutually agreed to format. In the 1990s, this is frequently an electronic one. The parties concerned need to have a common understanding of the meaning, and significance for the group, of information received. The receipt of the information needs to trigger an agreed supply chain action or series of actions. An example is the transmittal of sales figures by the retailer to the manufacturer which signals a pending order. The procedures and timing of subsequent action, such as the dyeing of fabrics or the ordering of components from suppliers, would have been determined through supply chain communication and strategic planning goals. Prompt implementation of agreed action is required for efficient Quick Response.

This paper has asserted that the workshop process was beneficial for the companies participating in the Quick Response Program. Because of the open communication between the extended supply chain members involved, many of the previously existing obstacles to supply chain efficiency were overcome. In addition, the workshops facilitated strategic planning in the cluster groups and this was based on an increased understanding between the participant companies. It was evident that the improved cooperation, communication and quality of strategic planning was linked to business success across the clusters.

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