Supply Chain Management- Some Future Options

Adrian BEESLEY
Burman Associates/Academy of Logistics and Transport

Presented to the Logistics Congress 2004

Key Words:
SCM Partnership Issues, Time Compression, Intelligent Contracts

ABSTRACT

Many logistics executive careers have been invested in the pursuit of some, if not all, the aims and aspirations of Supply Chain Management (SCM). Interest in the area of SCM and the inspiration to write this paper has been brought about by 25 years experience in the industry and through the study and inter-action with some stimulating academic material. This has highlighted important issues associated with problems in SCM. The paper describes key principles behind SCM and links them to ‘partnership’ frameworks, time compression approaches and moves the discussion and issues forward to some future concepts such as supply chain politics and the possible use of intelligent contracts. The aim is to prompt thought about the future and to encourage discussion of the main issues.
Supply Chain Management- Some Future Options

1. INTRODUCTION

When setting out to engineer a supply chain, a management team has a number of options. As with everything else in life, the first consideration must be the objective. By definition, a “Supply Chain” exists to supply something to someone. That someone is the ultimate customer, usually a consumer, but perhaps a patient, a soldier, a police officer or some other public servant. To understand the idea of supply chain management (SCM) it is helpful to relate this to six key concepts expressed as principles as summarised in table 1, (Beesley 1997).

2. SUPPLY CHAIN PRINCIPLES AND THE IMPORTANCE OF PARTNERSHIP

The key principle is end user focus, the recognition of the dominance of the consumers of the ultimate product or service at the end of the chain. SCM recognises, first, the alignment of all the successive enterprises in the chain to relate their inputs directly to satisfying the end user. No two people have precisely the same need and aspiration, but users can be grouped into different classes within which needs are very similar. Hence the second principle, the segmenting of the market into “Distribution channels” and designing individual logistic systems to satisfy each. These ideas have been current since the 1970’s and remain the foundation of present day SCM, albeit they have since been further developed, mainly by ICT. It can be noted that more recently the principles counsel well with the requirements of effective SCM as summarised by Andrew Cox (Cox, 1999).

<table>
<thead>
<tr>
<th>The Principle of:</th>
<th>Nature of the Principle in the Context of SCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>End User Focus</td>
<td>Long-term supply chain profitability is dependent on the end (ultimate) user being satisfied. This acts as the focus for all supply chain design, development and process engineering</td>
</tr>
<tr>
<td>Horizontal Boundary Definition</td>
<td>Different end user needs are more competitively satisfied by channels (horizontally defined routes or workflow) designed and engineered ideally across the Supply Chain from a logistics service perspective</td>
</tr>
<tr>
<td>Vertical Boundary Definition</td>
<td>Boundaries of ownership and control (dividing the chain vertically) should be positioned to suit the needs of the end user according to best practice and make buy theory</td>
</tr>
<tr>
<td>Inventory Positioning</td>
<td>The positioning and levels of inventory are best determined in a total Supply Chain context to suit end user needs in line with stock and postponement theory</td>
</tr>
<tr>
<td>Controlling Demand Dynamics</td>
<td>Understanding and levels of control over Demand Dynamics is best achieved by having a holistic supply chain perspective. The principle basis is through information integration and the use of best practice relationship management.</td>
</tr>
<tr>
<td>Co-Operation And Co-Ordination</td>
<td>The attainment of the above principles requires co-operation and co-ordination between supply chain participants. For this to work effectively each SC participant must have self-defined and motivating objectives based on trust and some common business aspirations.</td>
</tr>
</tbody>
</table>

Table 1. Supply Chain Principles
Since the first principle demands a common objective for all contributors to the chain, via satisfaction of the end consumer, individual company objectives must be reconciled to this common objective, despite inescapable conflicts of interest between successive traders. Richard Lamming (Lamming 2002) points out that the central paradox of supply chains is that firms are competitors and collaborators at the same time, “If a house be divided against itself, that house cannot stand” (Gospel according to St. Mark). This demands that the supply chain be seen as a continuous co-ordinated machine to serve the consumer, so internal conflicts must be frankly recognised and dealt with at the outset. This is why the principle of cooperation and coordination is a key unifying principle underpinning all aspirations associated with SCM. This however presents a problem that may appear insuperable. Each company chief executive is accountable to his board for maximising each year’s bottom line profit. One of Michael Porter’s (Porter 1990) five drivers of profitability is “Relative bargaining power with suppliers and customers”. Little wonder that the main item of discussion between traders is transfer price, nor that each trader tries hard to maximise his own take from the deal. In such head to head circumstances, the free and full exchange of information seems a forlorn hope; knowledge is power and one does not willingly give power to a bargaining adversary.

Yet barriers to the flow of data within a process prevent the efficient operation of that process, so if we see the supply chain as a continuous process such barriers must be removed. Truly competitive enterprises recognise that short term partial optimisation of steps in a process (or links in the chain) cannot produce a winning result, for if a competitor runs a fully effective chain, that competitor will sell a better product to the end consumer more cheaply. Long term survival in a global market depends upon a more sophisticated approach to gaining advantage.

2.1 Types of Supply Chain Relations

A range of commercial relationships between traders, depend upon the extent to which the fate of one is bound up with the fate of the other. At one end of the scale is “Open Market” where each trader has a very wide choice of suppliers or customers, each with comparable needs or capabilities, and the product in the exchange is a common commodity, not core to the product of the buyer. This might apply to duplicating paper for internal use or to light bulbs for the office. Neither trader believes the other can fundamentally affect his business and each is free to get the best out of the individual deal as he can.

Next is the “Closed Market” where the product in exchange is not particularly specialised but quality is critical, because it will form part of the content of the buyers offering to his own customers. In this case (as in GE USA or Walmart) a relatively small number of suppliers are chosen for their reliability and quality, and then allowed to bid against one another for each batch of material required by the buyer. This might apply to duplicating paper for internal use or to light bulbs for the office. Neither trader believes the other can fundamentally affect his business and each is free to get the best out of the individual deal as he can.

Next the “Open Market” of saving the constant repetition of supply approval processes, and the advantage over the Toyota (Womack 1990) practice of requiring annual 3% reductions in transfer price, that lowest market price is achieved while neither bankrupting the supplier in times of rising material costs nor allowing slack performance in times when input costs are reducing. It does, however, carry the inevitable costs of duplicated relationships.
Moving up the spectrum of commercial relationships we come to the practices commonly known as “Partnership”. Our observation of many of these relationships leads to the conclusion that they would be better described as “Assured Patronage”. The relative power of the two traders can be quite disparate and a small supplier to an automotive giant using this model wryly remarks “Some partners are more equal than others”. Usually, the relationship arises where the principal sees the economic sense of choosing the “best” supplier for his purpose, thus eliminating duplication of records, tooling, quality checks, accounts and inter-company communications. That supplier is then granted sole rights (or joint rights with another) to supply a particular item or items over a defined period. Most such “Partners” are heavily dependent on the principal for a substantial proportion of their own business and the arrangements for exchange of data and such matters tend to be one sided. Where the power of each trader is well balanced, in that they both need each other to accomplish their individual aims, we may see the growth of a true partnership, in the form of a ‘Strategic Alliance’ where each trader invests a significant amount of capital in the venture (e.g. Euro tunnel)

One partnership definition (Fisher College of Business 2000), requires that: “A partnership is a tailored business relationship based on mutual trust, openness, shared risk and shared rewards that results in business performance greater than would be achieved by two firms working together in the absence of partnership.” This, in the writer’s experience is seldom achieved in practice, but the recent advent of “CFIR” (collaborative forecasting and inventory replenishment), for example by Heineken or Eastman Chemical Company in USA, goes a long way to achieving the benefits of true partnership, albeit in an autocratic regime rather than a democratic one.

It is unlikely that inter-company relationships will be identical between every link in the chain. The choices any particular trader will make depend upon the nature of the supplies he is buying and his relative buying power in the market place. Few enterprises form any kind partnership with suppliers of every day consumables, which play no part in their end product (e.g. office coffee, stationery, light bulbs, toilet necessaries, internal road maintenance material, and the like). Similarly, readily available basic commodities that are incorporated in the product, while subject to more stringent quality control, are frequently tendered via the Internet to all comers. The contractual security of supply from any one source becomes more critical as the product in play becomes more significant in the performance of the buyer’s own product, and as the capabilities required to provide supply become rarer.
The different types of supply chain relationship concepts can be viewed through an adaptation of Douglas M Lambert et al (Lambert 1996) and James R Stocks (Stock & Lambert 2001) work on different types of partnership.

Stocks states that Lamberts 3 types of Partnership encompass the following characteristics:

Type 1: Recognition as partners, limited co-ordination & planning. Short term focus involving one area within each company
Type 2: Some activities integrated. Not indefinite but long term plans within multiple areas across each company
Type 3: Extensive integration. Each party views the other as an extension of their own firm. No termination date envisaged.

Stock makes clear that the context motivating partnership can be summarised in terms of Drivers, Facilitators, Components and Outcomes. Drivers are compelling reasons to partner in areas where benefits are not possible without partnership. The above SCM principles may be the basis, however these usually boil down to more basic commercial needs such as asset/cost efficiencies, customer service improvement, marketing advantage, profit, stability and growth

The drivers provide a good basis for partnership but don’t ensure success and it must be noted that different companies have different drivers. Drivers contrast with what Stock calls Facilitators as these are jointly identified, are usually difficult to develop and they usually just exist as a part of the commercial environment. They are in fact supportive corporate factors used to identify the correct environment for success. These might include corporate compatibility, similar managerial philosophy, mutuality and symmetry
What is of note here is that the mix of drivers & facilitators determines the type of partnership that should appropriately exist. As figure 1 implies, neither partnership at levels 1 to 3 nor vertical integration (i.e. in-house operations) are targets. The nature of the partnership much depends on a particular type of situation in relation to say a certain type of supplier or product range being procured.

Further to drivers and facilitators, components go onto determining the joint activity and processes used to build and sustain the desired outcomes that in turn reflect partnership performance. Components therefore can be used to describe the nature of the partnership and might include: planning, joint operating controls, communications, risk and reward sharing, trust and commitment, contract style, scope, finance invested. Some of these aspects will be examined later.

Stock’s framework provides a means for determining the nature of inter-company relations and appropriate levels and forms of ‘partnership’. This is useful because, as stated in relation to the SCM principles, relations between companies is key but have inherent weaknesses. A key benefit therefore is the provision of a means to understand the conditions that need to exist to ensure relationship stability and success. For example at high level of integration two players may well be reasonably equally balanced in the power they can exert, because each is dependent upon the other. Such arrangements may arise because one partner has better access to a particular market or application while the other has a particular expertise or capability. The relationship may however be difficult to manage because typically not all of Stocks facilitating aspects for the particular form of partnership are present or are in equilibrium. For example lasting success requires comparable cultures in the two companies. A conservative, short term, investment horizon in one and an adventurous, higher risk, policy in the other will cause insupportable tensions before very long.

3. THE BARRIERS AND PROBLEMS WITH SCM

Given the perspective that Stock brings an understanding of the nature and likely stability of partnerships, there might be some grounds for optimistically engineering supply chain relations accordingly with good alignment to SCM objectives. Significant issues have been shown to exist and are summed up by Brace (Brace & Hickman 2004), stating that the reason why SCM fails is because of:

- Rational unwillingness to surrender power of decision to anyone not accountable to this particular set of shareholders
- Rational and irrational lack of trust in other traders
- The irrational urge to dominate other people, to be seen to be “The boss” and receive the homage from trading partners.

These concerns have focused expectations on alternative approaches to encouraging SCM.
4. SOME ALTERNATIVE APPROACHES TO ACHIEVING SCM

4.1 Time Compression

The term time compression was originally introduced by Professor Colin N New in 1992 (New 1992) and in its most basic form relates to the reduction of the time consumed by business processes through the elimination of non-value adding process time. Many processes are usually identified as producing very little added value and this may highlight the need to totally reengineer and compression them. Within for example a typical UK manufacturing company at least 95% of the process time is accounted as non-value adding. This well established statistic is supported in the UK by the TCP (University of Warwick’s Time Compression Programme) in 1995 (TCP 1995) and in the USA by Barker in 1994 (Barker 1994). This approach is applicable within the context of SCM. For example the removal of non-value activity gives rise to a cost advantage, if however companies go for the reverse and apply cost reduction initiatives without a reference to the time based implications, additional costs may be incurred elsewhere in the supply chain.

The key aspect to the use of ‘time’ is that it is not necessarily about being faster or the fastest. Quality is paramount to competitiveness and therefore substituting for example quality for speed is not the primary objective. A Time Compression approach focuses on how companies use time to deliver a sustainable fast response to customer needs through business processes that are organised around a strategic time based focus. The concept is about strengthening the holistic supply chain structure to achieve time-based objectives with tactical decisions being made at the correct level to enable the speed of response. (Stalk and Hout 1993)

Brief descriptions of how time relates to the attainment of objectives associated with the SCM principles are detailed in the table 2 below. Note that it can be argued that these principles hold true irrespective of whether a company is operating in the context of SCM or some other holistic approach to process re-engineering:

<table>
<thead>
<tr>
<th>The Principle of:</th>
<th>Useful Attributes of a Time Compression Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>End User Focus</td>
<td>Time Compression requires that the end user is identified as the principle anchor point and thus highlights the time based relationship between the end user and the Supply Chain.</td>
</tr>
<tr>
<td>Horizontal Boundary Definition</td>
<td>Time defines the principle characteristics of the logistically distinct channels and service needs. The Time Compression approach provides a good diagnostic and basis for redesign.</td>
</tr>
<tr>
<td>Vertical Boundary Definition</td>
<td>The consumption of non-value time highlights where ownership and general boundary issues exist and require adjustment.</td>
</tr>
<tr>
<td>Inventory Positioning</td>
<td>Time and cost provides a good deterministic framework with cycle time as a fundamental driver of stock positioning, levels and service. ‘Value add stock’ is a time based diagnostic.</td>
</tr>
<tr>
<td>Control Over Demand Dynamics</td>
<td>Time measures the problem and time compression tackles the root causes of demand dynamics.</td>
</tr>
<tr>
<td>Co-Operation And Co-Ordination</td>
<td>Time provides a common and trustworthy metric across the supply chain that highlights the opportunities and issues.</td>
</tr>
</tbody>
</table>

Table 2. Supply chain principles related to the time compression approach
The application of the Time Compression approach can be shown to have direct applicability to the aims of each of the principles detailed in table 2 (Beesley 1997). The approach therefore has the potential to become the basis for unifying SCM objectives and the effort of companies and participants within the same supply chain. As a consequence this has been used as a tool to encourage better ‘partnerships’ by providing the motivation and rational for overcoming some of the barriers that Brace highlights.

Unfortunately even where the concept is understood, the rate of adoption of ‘Time Compression’ has been slow. Part of the reason for this is because the approach from a SCM perspective often requires the total commitment of all businesses from the top of their organisations downwards. Coupled with this is the fact that change within any organisation is always challenging, particularly when it involves making difficult decisions in one department or function for the greater good of the company and the supply chain.

5. SUPPLY CHAIN POLITICS AND INTELLIGENT AGENTS

Lambert and Stock’s approaches provide an understanding of the responses and structures that need to exist for productive supply chain relations. Time Compression can provide one of the motivating drivers for effective inter-company cooperation within the context of SCM. The fundamental aspect that typically constrains SCM progress is the difficulty associated with motivating and ensuring people work to a SCM agenda. Brace and Hickman have recently given considerable attention to this aspect.

Brace suggests that ‘Understanding supply chains depends upon understanding politics’ “The art and science of Government” and notes that ‘some of the most profound thinkers known to us have written on the subject of how and why communities of one kind or another survive intact or disperse in confusion.’ Brace and Hickman (Brace & Hickman 2004) takes and investigates this perspective and relates it to how an alternative potential solution to the SCM issues might be developed.

The paper makes significant note of John Locke’s (1632-1704) ideas on the social contract. The concept is based on the idea that individuals working in a supply chain have collectively a set of beliefs and behavioural patterns that adhere to practices that are either perceived or known to be for their greater good. The notion is therefore, ‘life is better if you behave’. This is what Brace calls a bottom up approach as it is derived from the grass root resources within any supply chain.

The idea of what feeds this set of beliefs and behavioural patterns appears to come from a social contract derived from a more top down perspective that may hold a more holistic and intelligent (more over an informed) view of for example, the SC principles.
The other key aspect is that as Brace suggests with ‘Trading all over the world, with corporations whose ownership is dispersed and occasionally opaque, the trader needs to build confidence’. Companies and organisations are therefore accustomed to using binding contracts but there is a need to imbue them with intelligence to encourage and not restrict good SCM practice.’ Therefore it seems appropriate that the idea that an alternative form of contract or written terms of engagement and understanding needs to exit, probable in parallel with a conventional contract. Hickman (Hickman 2002) develops this and suggests the concept of the “Intelligent Contract” By analogy with the “Intelligent Agent” - an electronic response device which “learns” rather than being pre-programmed in its responses. He points out that there is a need to develop a contractual relationship that varies with circumstance to deliver the original objective effectively. The aim would be, inter alia:

- Manage risk and uncertainties jointly and fairly.
- Define and if necessary re-define roles and responsibilities unambiguously.
- Give clear access to information established and an open dialogue formed.
- Provide incentives, cost reduction programmes and define relative profit levels.

Recently Burman (Beesley 2004) conducted work with small independent companies in Eastern Europe. This focused on developing strategies to maintain and grow market share in circumstances where inevitably there will be an emergence of competition from big corporate supply chain ‘drivers’. The basis of a solution is founded on the idea of the independent companies joining together, in a club, which has rules and recognises objectives associated with good supply chain practice. The club, in this instance, will be a form of buying group with a remit that will need to go beyond procurement. It is anticipated that minds focused on possible commercial extinction might soon become interested in joining and co-operating with former competitors through such an association. It is of course accepted that a buying group focuses very much on the aspirations of a certain singular tier (and even functional level) within a supply chain network of companies, i.e. procurement and consolidated purchasing. The group however will soon have to focus on boarder SCM issues along its supply chain if it is to compete with the larger well structured corporate supply chain approaches. These group initiatives will be underpinned by an instinctive notion of how the members should act within the framework provided by the rules and stewardship of group membership.

6. CONCLUSION

This paper has taken the view that SCM and some of the principles that it aspires to are legitimate. SCM objectives critically depend on effective supply chain relationships. The nature of these relations has been positioned in robust frameworks which define logical approaches. Coupled with this Time Compression re-engineering has been identified as one means to improve and promote holistic supply chain and business process design and value add capability. The nature of these approaches should lead to the purveyance of the SCM concept but, for the reasons associated with risk, reward and the management of human rationality, SCM has faltered and the potential of concepts such as time compression still await a catalyst to realise full potential. Perhaps the catalysts that marries some, if not all, of these approaches together might be a form of social contract or Hickmans “Intelligent Contract”. This correctly reflects the need to have rules, but points
to the requirement for flexibility and to have some form of charter that changes in time with circumstance making clear the forms of objective and the behaviour that is expected. This is perhaps not too far removed from what is currently happening in the re-cycling and environmental arena. Requirement norms and legislation are emerging as the necessity in this important area grows, reflecting new objectives and forms of behaviour at many levels across a range of supply chains.

ACKNOWLEDGEMENTS

The author wishes to thank Burman Associates and the UK’s Academy of Logistics and Transport, for the support and sponsorship provided in the construction and delivery of this paper. Special thanks go to Gordon Brace (Chairman of Burman Associates) for valuable input and provision of editorial support during a difficult time.

REFERENCES

Beesley, Adrian P., (1997), Time Compression in the Supply Chain, Global Logistics and Distribution Planning, Kogan Page
Beesley, Adrian P., (2004), Unpublished work on Buying Groups in Eastern Europe
Gospel according to St. Mark, Chapter 3 verse 25 in the King James translation
Hickman, R., (2002)” Supply relationships & intelligent contracts” UK Logistics Research Network Conference paper
Lamming Richard, (2002), Lecture to Thames Valley Supply Chain Network Group
Womack, Jones and Roos, (1990) The Machine that Changed the World, Maxwell Macmillian