

WHY DEMAND PIPELINES ARE BETTER THAN SUPPLY CHAINS.

(Alternative title: FORGET SUPPLY CHAINS – THINK DEMAND PIPELINES)

F. Hewitt

INTRODUCTION

During the 1990s many companies fundamentally revised their approach to planning and operating materials flows into, through and out of their manufacturing operations. “Integrated Supply Chain Management” (ISCM), in both its intra-company and inter-company forms, became widely acknowledged as a significantly more effective operational process than the highly fragmented approaches of the past. Examples abound of companies that have improved both their balance sheets and their operating profits through the implementation of ISCM strategies.

ISCM is, in fact, the most successful example of managing cross-functionally. Its benefits stem from the principles expounded by the pioneers of business process management in the early 1990s. Within a single enterprise, the performance improvement comes from better co-ordination of previously fragmented and discordant business practices in Sales, Warehousing, Production etc. Extend supply chain integration beyond the boundaries of an individual company, co-ordinating the processes and removing delays and redundancies across a number of companies in a supply chain, and the results are even more dramatic.

With the success of these initiatives “The Supply Chain”, as a term, has become embedded in management thinking. It has proved extremely effective in capturing the basic concepts of partnership and co-operation upon which these process improvement initiatives are based. The visual image of a “chain” of people co-operating to pass materials from point of origin to point of need (perhaps the formation of human chain to pass buckets of water from a stream to put out a fire) is a powerful one. It is also one which operations managers can easily visualize as being transferable to a commercial setting.

But is it possible that the term is becoming outdated and potentially restrictive of further improvements in process effectiveness? As we search for further improvements, should we really be thinking of chains? After all, “chains” have their limitations. The strength of a chain is determined by its weakest link. The *slowest* transfer point determines the speed of movement along a chain, not the fastest one. In one sense being “chained” to others is the same as being *restricted* by them. And why focus on supply? Isn’t this at odds with that other great mantra of the 1990s, customer obsession? Shouldn’t demand take preference over supply in our thinking?

In fact, careful observation of evolving best practice suggests that ISCM is quietly being replaced, albeit in a piecemeal and ad hoc way, by practices which exhibit the following characteristics:

- Demand is replacing supply as the driver of materials flows
- Continuous flows (pipelines) are replacing chains (point to point movements) as best practice in physical distribution
- Delegated control is taking over from partnering as the preferred mode of exercising operational control.

Taken together these characteristics form a new template against which companies can judge their existing practices. Such an approach can best be described as Demand Pipeline Management, an approach that offers for potential efficiencies beyond the levels attainable by even the best integrated supply chains.

SUPPLY OR DEMAND?

Without being overtly acknowledged as such, many of the recent developments in SCM represent a move towards recognising the logic of driving materials flows via demand stimuli. This is true both for retail sales processes and for company to company transactions.

Demand driven replenishment is now a common practice within manufacturing operations. A simple Kanban system can be seen as an example of demand pulling inventory to point of use. At an inter-company level Just in Time (JIT) deliveries are often triggered via a demand driven approach.

It is a relatively recent development, however, to see true point of consumption information (i.e. the sale or usage of finished goods to the end point consumer) used to trigger replenishment actions back through multi-company supply processes. Significant examples of these demand driven pipelines are, however, emerging, with dramatic improvements in inventory and service level effectiveness.

Efficient Customer Response (ECR) is the term which Proctor and Gamble (P&G) adopted for its pioneering work in the early 1990s. The ECR programme encompassed a range of initiatives, but the essence of it was to tap into point of consumption data and to support continuous replenishment matched to actual retail store sales. Significantly, P&G not only adapted its own production processes to match supply to demand, it also worked with second tier suppliers to synchronise their activities into the continuous replenishment process and with third party truckers to develop and implement appropriate delivery schedules.

It is not surprising that early implementations of ECR occurred in the retail sector with a particular focus on Fast Moving Consumer Goods (FMCGs). The adoption of Point of Sales (POS) information technology, bar coding and Electronic Data Information (EDI) standards, combined with the relatively simple manufacturing processes involved in producing most FMCGs, paved the way in this sector for ECR.

However, the basic approach of allowing actual rather than predicted demand to drive supply has subsequently spread beyond the retail sector. The Dell approach to direct delivering Personal Computers (PCs) to telephone orders is a classic implementation of supply responding to actual demand. In this case it may be said that the response usually calls down existing stock items held by various suppliers, but the novelty of the business approach remains, namely tapping into end consumer demand in order to drive the materials flow.

One step beyond Dell is “mass customisation”, the spreading of true build to order approaches from the most expensive items, traditionally ships and airframes, to much more common and lower priced items. Perhaps the most frequently quoted example is the customisation of bicycles by a Japanese manufacturer, but the technique has now been extended to customised Barbie dolls, ordered over the Internet!

There are undoubtedly still many industrial sectors in which the norm is to build stocks of finished goods to predefined production plans, and to use devices such as price premiums or discounts to match demand to available supply. On the other hand, the above initiatives by the more progressive manufacturers and retailers clearly show that actual demand (pull) can supersede supply (push) as the driver of many materials flows. In fact, demand chains are replacing supply chains in these cases, with reported efficiency gains in terms of reduced inventories, increased service levels and sales and reduced operating costs.

CHAINS OR PIPELINES?

As companies attempt to capture the full potential benefits of using actual demand to drive their order response processes, extreme pressure is being put upon manufacturing and distribution processes to attain faster response times to customer orders. In fact the challenge is to attain an almost continuous flow of materials, rather than a staged station-to-station approach involving many discrete inventory locations. The response of Dell and others to this challenge has been to adopt a Merge In Transit (MIT) process wherever possible. Supported by significant recent advances in in-transit tracking technology, the customer’s order is broken into its constituent items and the flow of these sub-units is regulated such that they come together en route to the customer and the complete order will arrive as a single entity at the delivery location. The approach is akin to sucking different materials through an interrelated network of pipelines, and mixing these to provide the end product at point of consumption. This represents a fundamentally different response from that of the traditional multi-stage supply chain.

Other approaches to minimising delays in responding to orders concentrate on combining the distribution/manufacturing/assembling/finishing sub-processes into a single seamless mega-process. Faced with the issue of responding to country specific orders for copiers, when the essential product is identical except for language specific items such as LCD chips and manuals, Xerox and others have adopted a “doggy bag” strategy. The product is designed in such a way that the country specific items can be fitted at the latest possible moment. The “doggy bag” containing the items is matched with the basic product after the orders are taken, and the items can be fitted either in transit or even as part of the installation process at the customer’s premises.

“Synchronised production” is a term which is gaining currency to encompass these responses to the need for increased flexibility and speed of manufacturing response. In effect, manufacturing and distribution processes are becoming inseparable in the effort to attain a continuous flow of materials to point of need.

The idea of overlapping in-transit time and assembly time in order to reduce total delivery time is not new. Whaling factory-ships have employed the basic technique for many years. What is new, however, is that variants of the techniques are now beginning to emerge in different industrial sectors. Responding to demand stimuli puts new emphasis on these approaches, and the true economics of the traditional build for stock, multiple echelon supply chains are being more and more rigorously challenged.

CO-ORDINATION OR CONTROL?

Supply Chain Management is based upon co-operation and co-ordination. Information is shared between partners in the chain in order that their actions may be co-ordinated for their mutual benefit. Traditionally this co-operation has taken the form of passing “buckets” of information representing materials orders along the chain in order to stimulate a contraflow of “buckets” of replenishment materials. At the boundaries of companies Electronic Data Interchange (EDI) standards have been used in order to ensure systems compatibility.

However, two major recent developments in Information Technology (IT) and in Information Systems (IS) design hold out the possibility of radically re-engineering this traditional SCM approach. Firstly, the emergence of Enterprise Resource Systems (ERSs), implemented on a client server networked IT infrastructure, means that within a company information from all points in the intra-company supply line is available to all participants in the business process simultaneously. Secondly, with the emergence of extranets, and in particular the adoption of the Internet as a vehicle for commercial transaction processing, even inter-company information exchange can be simultaneous rather than sequential. At least theoretically this offers enhanced potential for simultaneous action, leading to levels of responsiveness across materials flows which have previously been unattainable.

In order to attain these new levels of responsiveness, however, it is necessary to rethink not only the information flows but also the roles, responsibilities and authorities of the participants within the business process. If full opportunity is to be taken for overlapping the activities within the process and moving beyond co-operation and co-ordination of partners' actions to real time flow regulation, it will be necessary for one participant in the process to take full responsibility for multiple activities along the pipeline, including those outside his/her traditional sphere of influence. Interestingly, a number of examples exist to suggest that early signs of a move to this type of control are emerging in the most progressive companies.

Xerox was one of the original pioneers of SCM. The company has subsequently created a whole new professional role, that of "Customer Supply Assurance Manager" (CSAM). The CSAM views the total pipeline from component suppliers to finished goods, and is measured on the value of inventory in the whole pipeline, as well as customer service level. The CSAM's role reflects the belief that effectiveness and efficiency stem as much from integrated decision making as from integrated physical materials handling. Matching supply to demand in real time is the responsibility of a professional, not a committee.

Bose Corporation's development of its "JIT II" approach is another clear example of expanding the authority of a single individual to cover multiple roles within the product design, procurement and order satisfaction processes. With this approach a supplier's representative is located in-house within the customer's design and procurement team. This "in-plant" person is empowered to place orders on his/her own company. Performing the three tasks of planning, purchasing and supplying as a single integrated activity has vastly reduced the complexity of the process and effected major reductions in cycle times and overhead costs.

On a more widespread level, the emergence of Vendor Managed Inventory (VMI) practices may also be seen as a move towards single point inter-company control of both information and materials flows. It is a natural extension of ECR. By giving the supplier responsibility for monitoring consumption, supply and manufacturing, demand can be effectively connected with supply in a highly efficient manner. In some cases an extended version of VMI has developed, namely Category Management (CM), vendor based management of a complete product category on behalf of the customer.

Overall the evidence is beginning to emerge that at least some companies are willing to move to levels of delegated authority which go beyond the normal relationships of trust exhibited in traditional SCM. These are the companies best placed to take advantage of the opportunities offered by IT, both within and between companies, to increase both the speed and the flexibility of their response to real demand.

CONCLUSIONS AND IMPLICATIONS

The concept and practice of Integrated Supply Chain Management has served companies well over the last decade. The most progressive companies are, however, moving beyond SCM into a new form of operating practice which differs significantly from classic SCM approaches. Under this new approach:

- Actual demand provides the stimulus for action, not forecasts or supply
- Pipeline-like continuous materials flows replace multi-echelon chains as the objective of manufacturing and distribution practices
- Delegated single point control replaces multi-partner co-ordination as the preferred operational decision making process.

Perhaps no one company has yet made the *full* transition from SCM to Demand Pipeline Management (DPM) in all the aspects listed above. There no longer appears to be any reason, however, why full DPM cannot be implemented if companies are willing to make the conceptual and practical changes necessary for its adoption.

For those companies that have implemented ISCM strategies, the time is now right to further review their practices against the DPM template.

For those companies who are not yet at the ISCM stage, there is an opportunity to leapfrog to an even higher level of effectiveness.

For all companies aggressive movement towards demand pipeline management is imperative if they wish to attain ongoing, competitive levels of operating efficiency in their demand satisfaction processes.