

Lean supply chain

Competitive advantage

Today's manufacturers operate in an increasingly demanding environment that includes global competition, increasing pressures for cost reduction, quality-driven compliance and improvements in on-time & in-full orders. Each of its core business functions is affected, ranging from product design, manufacturing, supply chain operations, sales and customer service. It is in this context that many manufacturers are initiating enterprise-wide lean cultures and programmes in order to compete in the 21st century.

R V Ramakrishnan

Although lean concepts and disciplines have long been associated with dramatic improvements in the manufacturing arena including waste elimination, supply chains today face enormous pressures linked to competitive forces and ever-exacting customer demands. 'Lean supply chains' are those where end-customer demand permits smooth, synchronised flow of materials, information and physical assets based on period-specific demand requirements.



Principles

The principles of lean supply chain are:

- ◉ Product value has to be defined from the customer's point of view
- ◉ Supply chain and the information that supports it should flow continuously
- ◉ Product should be pulled by the customer, not pushed by the company
- ◉ The entire organisation should work towards achieving perfection, concentrating on waste-reduction and value-addition in all of its supply chain processes

Components involved

The components involved include:

- ◉ Lean suppliers, who can respond to changes, maintain lower prices, improve quality and deliver on time
- ◉ Lean procurement, which is a web-based and automated process
- ◉ Lean manufacturing, producing what the customer wants, in the right quantity, at the right time and with minimum resources
- ◉ Lean warehousing, eliminating waste in product storage processes
- ◉ Lean transportation, creating flow and using pull
- ◉ Lean customers, who value speed & flexibility and expect high levels of delivery performance & quality



Benefits

The benefits of lean supply chain are the following:

- Speed and responsiveness to customers (time reduction 10-30 per cent)
- Reduced inventories (10-30 per cent)
- Reduced costs (10-25 per cent)
- Enhanced customer satisfaction
- Supply chain as a competitive weapon

In moving towards a lean supply chain, it is important to focus on reducing waste within the organisation and partner members, from all points in the supply chain. We should define the value stream and map the supply chain processes that the product goes through, from creation to consumption. We need to determine where waste can exist, does exist and can be eliminated. However, creating a lean supply chain is a challenge, which requires changes in people's behaviour, business processes and technology.

Case study: Blue Star's lean supply chain

Indeed, lean supply chain management can lift troubled companies operating in mature markets into the realm of competitiveness. Blue Star was suffering from an average on-time-delivery record of just 33 per cent at its chiller-manufacturing plant at Thane (Maharashtra). The plant was struggling to break-even due to high inventories. An internal audit revealed that 10 per cent of its 500 vendors accounted for 60 per cent of the business, but still the company was devoting 90 per cent of its resources to deal with the remaining 400 vendors. As a result, 85 per cent of the time was wasted on non-value-added activities, like issuing as many as 3,000 purchase orders.

The company realised that it needed a leaner supply chain and its managerial resources had to be focussed on those vendors who supply critical components, which demanded downsizing of the supplier-base. Therefore, it reduced the number of vendors to 140 and concentrated on them to yield better results and improve the performance of its supply chain. Simultaneously, the company introduced a two-bin system of *Kanban* on the shopfloor, for automatic replenishment of C-class items.



The company also installed special software, which requisitions supplies from vendors in the right quantity and at the right time. The plant's order-to-delivery cycle-time has dropped from 103 days to 34 days. As a result, it can produce an average of 30 chillers per month, up from 17. Its work-in-progress has dropped from an average of 22 chillers to 6 chillers, while on-time deliveries stand at 94 per cent; while the tangible savings amount to Rs 1.5 crore a year, lean supply chain management is yielding Rs 22 crore in additional revenues.

The success of lean supply chain management is - 'from inability to meet orders, Blue Star has reached a stage where marketing is under increased pressure to sell what the plant can produce'.

Creating agile supply chain

One of the biggest challenges facing organisations today is the need to respond to the ever-increasing volatility. For a variety of reasons, products & technology lifecycles are shortening, competitive pressures are forcing more frequent product changes and demanding greater variety than ever before. To meet this challenge, organisations need to achieve greater agility, so that they can respond in shorter time-frames, both in terms of volume change and variety change.

'Agility' should not be confused with 'leanness'. Lean is about doing more with less by eliminating wastes in operations. Paradoxically, many organisations that have adopted lean manufacturing as a business



practice are not 'agile' in their supply chain. 'Lean' works best in high-volume, low-variety and predictable environments, while 'agility' is needed in less predictable environments where the demand for variety is high, such as that experienced by fashion goods. An important difference is that lean supply is associated with level scheduling, whereas agile supply means reserving

capacity to cope with volatile demand. The lean paradigm requires that 'fat' be eliminated, whereas the agile paradigm must be 'nimble' since sales lost are gone forever. The combination of lean and agile paradigms, recently coined as 'leagile', can optimise the total supply chain and enables organisations to obtain both efficiency and responsiveness. However, a truly agile supply chain possesses a number of distinguishing characteristics such as:

- ◉ Market sensitive - capable of reading and responding to real demand
- ◉ Virtual - use of information technology to share data between buyers and sellers
- ◉ Process integration - shared information between supply chain partners
- ◉ Network based - confederation of partners linked together

A major problem in most supply chains is their limited visibility of real demand. The point at which real demand penetrates upstream in a supply chain is termed as the 'decoupling point' and is the echelon at which market 'pull' meets upstream 'push'. The aim of the agile supply chain should be to carry inventory in as generic a form as possible ie, standard semi-finished products awaiting final assembly. This is the concept of 'postponement', a vital element in any agile strategy. The challenge to supply chain management is to seek to develop 'lean' strategies up to the material

decoupling point, but 'agile' strategies beyond that point.

There is a fundamental difference between the traditional approach to supplying products to markets and the newly emerging model, which suggests that the supply chain should become 'demand chain' - in other words, everything that is produced, handled or moved, should ideally be to a known customer requirement. A demand chain is focussed on effectiveness in the sense that it seeks to be market-driven by responding to the needs of the market more rapidly. The key to this transformation - from supply chain to demand chain - is agility.

A global leader in semiconductor business made tens of thousands of different varieties of logic chips, but the demand was hard to predict since few customers provided forecasts. While the overall volume of demand was quite predictable, constant changes in how demand was distributed among products & regions challenged the company's forecasting efforts. The root of the problem was that no fixed plan could accommodate dynamic demand. In fact, this company needed a more flexible, demand-driven approach to inventory management that would continuously update the plan. The solution was to postpone the last stages of product manufacturing, so that the company could delay making decisions about the final form of work-in-process products until demand trends were clearer. The 'postponement strategy' provided far greater flexibility and brought the company closer to the optimal, demand-driven approach to inventory management.

The changed conditions in the global marketplace demand a much more agile response from organisations and their partners in the supply chain. True competitive advantage is gained when an organisation can consistently meet customer needs more precisely and more timely. **MMT**



R V Ramakrishnan is a professional in operations management. He has over four decades of industrial experience and last held the position of DGM - manufacturing at Audco India Ltd of L&T Group. He is currently a management & training consultant in the areas of logistics & supply chain management. He can be contacted on rvrk@gmail.com