

Letting lean into your supply chain



The concept of lean is often primarily associated with the hands-on manufacturing processes. However, the extension of lean into ‘The Big Five’ – transportation, design, procurement warehousing as well as manufacturing is just as, if not more important. **Mark Eaton**, managing director of Amnis Ltd and fellow of supply chain strategy group IOM explains how.

Lean is an approach to improving businesses that focuses on the elimination of activities that don’t add value to customers. In a commercial setting, this is normally indicated by whether or not the customer would be prepared to pay for the activity. The traditional approach is to understand the end-to-end process within an organisation – the value stream.

Through this, the activities that can be eliminated, reduced in size or impact or combined to gain efficiencies are modified – streamlining the whole process. Extending the value stream from a single organisation to encompass the whole supply chain gives us the concept of a lean supply chain that spans the so-called Big Five elements. These define a true end-to-end supply chain: design, procurement, manufacturing, transportation and warehousing.

Lean in the Big Five

manufacturing. Many people are so used to hearing the term ‘lean manufacturing’ that they forget that without the extension into the supply chain, products would at best simply sit at the end of production lines and at worst not even exist, because no raw materials would be available to begin the manufacturing process. The lean supply chain is therefore about applying lean throughout the Big Five elements.

Lean in design

The incorporation of lean in the design area entails collaborative teams that often involve specialists from other organisations who provide technical input that is not available to a single design team. It also encompasses designing products that can be easily sourced and that minimise the part count. For some industries, it also includes design activities that lead to easy recycling or that minimize energy usage.

The incorporation of lean in design results in reduced product costs, shorter product development times, easier supply and recycling and lower input costs. The design phase makes up around 90% of the overall cost of a product, and therefore has a major impact on the long-term financial performance of the whole supply chain.

Lean in procurement

During the procurement phase, lean supply chains come to life. Lean procurement is concerned

with important activities such as rationalising the supplier base so that meaningful relationships can be formed with suppliers. Also, changes are implemented that reduce the time and cost involved in placing orders, while introducing flexibility in supply so that the processes are neither starved nor flooded with stock. Procurement is a two-way process – it involves suppliers and customers. Making communication easier between the two, combined with selective introduction of technology to improve ordering and the introduction of changes reduces costs and increases the flexibility of the entire supply chain.

Lean in procurement leads to reduced purchasing costs, greater flexibility and fewer stock emergencies; meaning that the rest of the supply chain is lean-enabled.

Lean in manufacturing

Lean in manufacturing is extremely common. What is less common is the consideration that lean manufacturing can be applied not just to factories, but also to areas such as production engineering and planning.

When lean is applied in manufacturing, it has a positive impact on the lead-time of the whole supply chain, as well as on product costs and quality.

Lean in warehousing

The lean concepts applicable to warehousing include reducing stock levels, increasing pick rates and accuracy and reducing damage, whether it be to staff or to products. The effective introduction of lean in the warehouse will incorporate concepts such as reducing movement distances and handling activities, eliminating delays in unloading and loading and focusing on delivering parts on time, in full (OTIF). Lean-enabled warehouses tend to have higher pick rates, lower returns and improved staff motivation.

Lean in transportation

Counterintuitively, efforts to improve customer service can have a major impact on the quality of shipping decisions. Failure to combine orders, using multiple shipping channels and a tendency towards expensive delivery options are symptoms of poor communication between the manufacturer and the transporter, and inefficiency in the transportation process.

Lean transportation is about introducing concepts like combined multi-stop loads, cross-docking, right sizing equipment and packaging solutions. It also

involves developing relationships with the bigger transporters in order to reduce costs and improve delivery performance.

Challenges in the lean supply chain

The first and most obvious problem that people face when attempting to make improvements across an entire supply chain is a lack of robust and professional relationships with suppliers and customers. Another main problem is the chaotic and undefined processes that are the driving forces behind the wrong behaviours in every one of the Big Five elements. This is often compounded by a history of adversarial management styles that have created a supply chain culture that resists change, does not allow for open discussions and inhibits innovation.

We emphasize the phrase: “Overcoming these challenges is not easy”. There is no quick fix or a magic wand. Instead, we propose that there are seven elements to a lean supply chain that build up over time to deliver improved performance, reduced costs and greater flexibility for all organisations that are involved.

1. *Remain focused on the voice of the ultimate customer. Think about what they would say was value-adding, and then eliminate anything else.*
2. *Understand the true end-to-end supply chain using value stream mapping.*
3. *Create a supply chain that flows, with activities being triggered only when required.*
4. *Design processes that are able to respond to volatility.*
5. *Introduce a culture of continuous improvement that is based on measures that drive the right behaviours and create openness and collaboration.*
6. *Find the suppliers that you can work with and change or eliminate as many of the rest of them as you can.*
7. *Build the capability of your team and those of your supply partners to enable them to understand how to get the benefits of a lean supply chain.*

How the Institute of Operations Management can help

The Institute of Operations Management (IOM), in partnership with Amnis and Unipart provides a wide range of training and support options to help you develop a lean supply chain. Examples of the workshops we are running in 2011 that will help you benefit from the seven elements of a lean supply chain are detailed below:

Inventory Control Techniques	This course focuses on stock control for bought-in items, finished goods and general stores stock control. It demonstrates ways to determine how to give the best customer service, reduce inventory investment, and assess and react to changing customer requirements. It also includes how to integrate the inventory effectively into the supply chain while maximising control without increasing workload.	12th–13th September
Accelerated Lean Skills Programme	This three-day programme takes participants from beginner to Green Belt in lean. Participants are required to produce a short post-training project to gain accreditation.	27th–29th September
Warehouse Management	This two-day course delivers the knowledge and understanding of the key elements of warehouse management practice that is fundamental to commercial organisations. It provides a greater insight into the role of the warehouse in today's supply chain and how effective warehouse management can lead to increased profitability.	8th–9th November
Advances in Inventory Management	The seminar will look at how inventory management has developed over the last five to ten years. One dimension of this has been to align inventory management throughout the supply chain – from suppliers, through a logistics network, to end customers. Another dimension is the integration of lean with functions of warehouse management, transport and purchasing. The seminar will examine which new ideas, techniques and approaches have stuck and which have not.	22nd November Due to the nature of this workshop, delegates from organisations that Unipart deems to be of a competitive nature will not be allowed to attend.
Developing a Culture of Continuous Improvement	This one-day introductory programme is designed to introduce participants to the things that need to be done to affect the climate of an organisation and entire supply chain to develop better relationships and a culture that supports a lean supply chain.	Coming soon: register to receive details. Email: emma.moore@iomnet.org.uk
Lean Supply Chain	This course serves as a detailed introduction to the value of using the principles of lean in the supply chain. It develops understanding of what businesses should commit to in order to implement lean processes in a substantive and valuable way.	Coming soon: register to receive details. Email: emma.moore@iomnet.org.uk
Operational Excellence in Manufacturing-based Supply Chains	This one-day introductory workshop is intended to help delegates increase the overall effectiveness and efficiency of their manufacturing supply chain.	Coming soon: register to receive details. Email: emma.moore@iomnet.org.uk Due to the nature of this workshop, delegates from organisations that Unipart deems to be of a competitive nature will not be allowed to attend.
Value Stream Mapping	Available as a one-day overview or two-day intensive practitioner programme, this workshop introduces participants to the practical aspects of mapping pathways, processes and entire supply chains.	Coming soon: register to receive details. Email: emma.moore@iomnet.org.uk

Efficiency and productivity from supply chain automation

The central theme in industry over the last 120 years has been to automate processes. Initially this was limited to the installation of production lines within individual organisations, such as the engine production facility within the original Ford production factory.

The development of new technologies and the specialisation of organisations have driven the need to extend automation beyond the factory gates and across the whole organisation.

The automation of supply chains is concerned with reducing the costs and effort involved in decision-making and management of design, production and logistics. To this end, the current state of automation in the supply chain can be grouped into four main classifications explored below.

1. Material flow automation

The complexity of many production processes and the distribution of production across multiple organisations creates a pressing need to track and manage the supply of materials, particularly around

bottleneck processes to ensure they are not starved of material. Material flow automation covers the flow of information relating to stock levels within the supply chain and the increasingly automated processes involved in initiating a request, whether that is a restock request or a logistics move request. The overall focus of this form of automation is to reduce inventories and avoid delays, ultimately contributing to shorter overall production lead-times.

2. Information flow and decision automation

It has only been in the last 20–25 years that the technology has existed to allow design teams to collaborate across multiple sites in the development of new processes and technologies. The ability to share information, to undertake research and even to undertake trials remotely has led to a step change in the way that design occurs. Activities that previously were linked together sequentially, massively increasing lead-times, can now occur concurrently. In addition, this aspect of automation covers operational activities, as well such as production planning – including MRP/ERP systems – and the use of eMarketplaces to enable suppliers to access customers – and vice versa – more easily, all of which are aimed at improving the procurement of parts and the planning of production. The overall focus of this aspect of automation is to reduce delays and inventory costs, but also to assist with improving the overall operation of the supply chain by providing information to enable decisions to be made, such as details of scrap rates and other rework costs and production bottlenecks.

3. Management and control automation

Factory automation and the introduction of robotics is a phenomena of the late 20th Century and has had one of the biggest impacts on productivity and the costs associated with production in the whole of human history. With the advent of networks, such as local area networks (LANs), it is now possible for a single person to control multiple machines, whilst the improvement in sensing technologies means that processes that previously relied on human intervention have been completely automated. It is not only in the production process where this element of automation can be found, because warehouse management systems (WMS) focus on improving warehouse efficiency and advanced planning and scheduling (APS) tools help to match demand to capacity more closely.

4. Relationship automation

This last aspect is concerned with co-ordinating activities across the supply chain, possibly involving three or more tiers of suppliers. Improving

accessibility through telephones, email and the internet has created the infrastructure for 24/7 customer service, whether that involves human beings or automated customer service interfaces where customers can place orders themselves without interacting with real people. However, this aspect of automation is also concerned with partner-relationship management (PRM) tools that help organise information on leads and orders, profiles of customers/suppliers, records of communications and transactions between parties, and even assists in the organisation of face-to-face or other forms of meeting are becoming part of everyday life for most organisations.

Successful automation

Not every business needs every type of automation and the art of success for most organisations is to have the right level of technology required to meet the needs of the market in which they operate. Having said this, technology and the selective automation of activities can either be an order qualifier or and order winner.

Order qualifying automation is the minimum level of automation that is expected by customers. For many, this might be as simple as a website and an email contact; for others, it might be the ability to undertake complex design drafting projects remote from the site and across multiple design teams. Without the minimum level of order qualifying automation, businesses are unable to remain within the market successfully.

Order winning automation leads to enhanced competitiveness. This includes automation that reduces costs and lead-times, as well as that which makes it easier to deal with customers. The problem with order winning automation is the arms race it creates as the development of order winning automation is rapidly copied by others in the market, and it therefore moves from being an order winner to being an order qualifier.

The successful automation of the supply chain is concerned with a focus on maintaining and enhancing your organisation's order qualifying automation whilst selectively investing in order winning automation as appropriate, and at the same time avoiding investing in technology that does not ultimately lead to improving your ability to compete and, more importantly, to win.

How the Institute of Operations Management can help

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To see what the IOM has to offer, visit our website:

www.iomnet.org.uk