

Supporting the Lean Value Stream with Technology Solutions

A PROACTIVE APPROACH TO MANUFACTURING

Introduction

In today's global manufacturing environment where customers are requiring manufacturers to do more and more with less and less, Lean manufacturing is emerging as a mantra; something that has implications for the entire product value stream and moves well beyond the Just-In-Time (JIT) method of parts stocking. In theory, Lean manufacturing is an overarching philosophy of eliminating waste at every juncture where it occurs across the entire value stream. In practice, Lean manufacturing principles are optimized through the supply chain.

Lean is a proactive approach to manufacturing that focuses on eliminating waste and providing value to the customer by identifying and producing products the customer wants. Lean processes enable customer demand to pull production, rather than the manufacturer dictating to the customer the products the customer needs, or allowing the manufacturer to push products to the customer. A value stream pulled by customer demand is proactive and based on current market conditions. It is much more responsive to customer needs than a pull system based on forecast.

Supporting the Value Stream Through the Supply Chain

Each product that is manufactured, from cars to kitchen tables, has its own product-specific value stream. It begins with identifying what is of value to the customer, setting a target price for the finished item, and flows backward from that point taking into account all the elements that will realize value for the customer throughout the manufacturing process. The value stream includes the sets of activities required to ultimately place the product in the hands of the consumer from concept to design, raw materials to production, and launch to delivery and includes the information flow for each stage. The value stream needs to be defined for each specific manufactured product, whether mass-produced or make-to-order, prior to initiating production. As the value stream is defined, the supply chain is formed in such a way as to optimize the goals of the value stream. It is important for manufacturers to focus on the technology utilized to manage the supply chain to ensure complete support of the product value stream.

The supply chain, which is comprised of the sequence of processes involved in the production and distribution of a particular commodity, supports the value stream by optimizing the efficiency of its elements. ERP systems should be selected with an eye to the entire value stream, not just the supply chain, and be capable of supporting the activities that take the product from concept to design, through production and ultimately into the hands of the consumer. By employing an ERP system that has the capability to communicate both within the four walls of the factory as well as externally to the customer's entire supply base, the manufacturer can eliminate waste from the supply chain and also from the entire value stream.

Important elements of the Lean enterprise include:

- Planned procurement processes to eliminate unnecessary stock purchases
- Just-In-Time stock delivery as close to the point-of-use and time-of-use as possible
- Planning and scheduling approaches that minimize throughput times and inventory by the reduction of waiting time
- Optimized process scheduling to minimize buffer stock
- Faster tool changes and more flexible assembly lines for better matched batch sizes that can flow continuously
- Configure-to-order or late configuration to minimize finished goods holding
- Elimination of business processes that add no value to the consumer
- Automated reporting and triggering to monitor the business in real time.

A common thread among these items is practices that save time and expense, and improve processes; all elements that eliminate waste across the value stream. To further define waste, it is simply empty time spent waiting, redundant work, unnecessary tasks and inefficient processes. To eliminate it, however, requires a comprehensive approach to supply chain management in which the capabilities of ERP systems, including MRP, are maximized to create efficiencies.

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While various methods of Lean manufacturing have been utilized for a number of decades, Lean as a comprehensive manufacturing process that encompasses a specific school of thought continues to be defined. And, as with any evolving process, myths exist. There are Lean experts who advocate the elimination of the MRP process, an element of ERP systems, as a planning and scheduling tool. This, unfortunately, often is perceived as a statement that ERP systems have no place in Lean. In truth, MRP processes can be utilized as strategic elements in Lean manufacturing and are integral components of strong ERP systems.

Lean and ERP: Perfect Together

In a perfect world, prior to product manufacture, a Lean value stream would be identified to the minutest detail and then an ERP system would be implemented to support it. However, the speed of a global economy dictates otherwise; with insufficient up-front time to optimize the value stream, it is essential to incorporate a continuous improvement process. Elements of Lean value streams must continually be refined and ERP systems need to have deep functionality as well as the agility to rapidly adapt to these changes. The right software can help support the value stream by mapping existing processes, streamlining them to remove redundant steps, and prototyping the new results into software updates.

Yet, a main challenge in manufacturing remains synchronization of the supply chain. Due to consolidation within the software industry, a global supply chain may be supported by several disparate ERP systems and a single view of the entire supply chain is not available to customers, suppliers and the enterprise overall. Additionally, with the pervasiveness of Lean manufacturing there exists an equally pervasive pressure from customers to lower manufacturing costs. This can be seen in the trend to long-distance sourcing. Globalization brings pressure to set up manufacturing operations where your customer physically produces goods and to produce goods in low-cost countries to realize savings. With all the pressure for cost cutting, the pace of business is accelerating with added pressures for faster time-to-market.

In a Lean environment, the ability to communicate real-time material usage to the customer's supply base is crucial. This enables the pull-based system and reduces inventory and the cost of premium freight buffers. Real-time communication also enables the supplier to react immediately to customer demand changes, optimizes supply chain execution, and increases both speed and accuracy throughout the supply chain. Suppliers can be more proactive because they have real-time demand-usage visibility and are less dependent on the reactive process of inventory counting. These practices keep factors affecting costs visible and thereby serve to reduce costs in the overall supply chain, which ultimately impacts the value stream.

A successful Lean manufacturing enterprise will employ an ERP system that extends outside the customer's four walls and collaborates with every entity in its supply base. It will also include a replenishment system that facilitates the industry best practice of replenishment based on consumption, which is a JIT principle; and a mechanism that allows the customer to pull material based on the actual consumption rate. It is essential for the ERP system to possess the agility to support continuous improvement in all areas of the supply chain relationship.

Lean manufacturing relies on ERP systems and automated solutions to eliminate the redundant work of manually entering information several times as well as the human error element of manual work. For example, an electronic Kanban solution extends Kanban to the entire supply base and had significant advantages over a manual system that utilizes traditional Kanban cards, which include visibility of the entire Kanban loop to all partners that shows the status of each Kanban. There are no cards to lose with the electronic system and a history is maintained from which data can be extracted.

Lean Benefits to the Customer Beyond the Four Walls

What's good for the customer is also good for the supplier and enhances the product value stream. All suppliers linked with an ERP system that can manage the challenges and opportunities of Lean manufacturing are provided full visibility to the supply chain. This enables quick reaction time to changing customer requirements as well as the collection of data to shed light on process improvements, benefits that ripple through the supply chain and ultimately have a positive impact on the entire product value stream.



Reduced inventory levels and reduced expedited freight costs help save in overall production costs. Demand is communicated in real-time and provides the opportunity for suppliers to react to changes or quality issues in a more expeditious manner, which saves time and costs. The need for a Value Added Network (VAN) connection to the supply chain is eliminated, which provides another cost savings. Materials managers are actually relieved of manual tasks, such as faxing, and can devote their resources to managing and creating efficiencies. Data extracted from the software provides visibility into purchasing and supplier performance and can point the way toward process improvements, and quality information is available from the system 24/7. Products can be tracked in-transit over long distances and, most importantly, the ERP system provides an international communication system that supports manufacturing in a global economy with intricate product supply chains.

ERP Systems that Optimize the Entire Value Stream

Infor addresses the Lean imperative by offering a comprehensive suite of ERP essential solutions that both support every aspect of the product value stream and eliminate waste across its entirety. Infor maps high-level essential solutions to support the value stream including customer relationship management, supplier management and resource management. These open-platform solutions function as stand-alones or as part of an integrated supply chain and address every aspect of Lean manufacturing for large global enterprises, mid-market manufacturers, and make-to-order operations. Infor's essential solutions range in scope from total supply chain management to specific Lean initiatives designed to pinpoint and eliminate areas of waste, to resource and execution management within the four walls, to labor management solutions that create a pull mechanism, to a Web-based supplier collaboration capability that supports Vendor Managed Inventory (VMI) and other Lean processes. Infor's comprehensive suite of highly flexible ERP essential solutions maintain a global presence and are easily localized to meet the business needs of specific regions in different countries. They support all elements of a Lean value stream across an entire enterprise with special options for specific verticals.

Conclusion

Technology is a key element in Lean manufacturing. Manufacturers and suppliers alike need to be highly selective when choosing an ERP vendor to support their product-specific Lean value streams. ERP systems need to provide solutions with deep functionality to react quickly to changing requirements and to manage the myriad elements of supply chains that may extend around the globe. A vendor's solutions also need to possess a high level of flexibility and agility to support elements of the product value stream with built-in mechanisms that reduce waste and create efficiencies.

Essential, too, is the ability to allow complete visibility to the entire supply chain from any location worldwide for quick reference and evaluation, as well as access to data collected throughout the supply chain that can point to areas where process improvements can add to the ultimate value stream. Infor's comprehensive suite of ERP solutions takes a deep dive into the minute details of supply chain management and provides the specific technology solutions necessary to drive a highly-efficient supply chain that supports the Lean value stream for products produced by every type of manufacturing operation.

With its comprehensive set of ERP systems, Infor offers an essential solution on both global and local levels for every manufacturer and supplier involved in product production that supports Lean principles and the Lean enterprise.



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