

The ever-changing supply chain dynamic



Thomas R Cutler explains the rapidly changing nature and importance of the demand-driven supply chain and statistical process control in the modern day business environment

The first rule of economics: the only constant is change. The supply chain is ever-changing, fluid and dynamic. Within the supply-chain the lifecycle of a supply-chain has shortened significantly and the need to economically and rapidly reconfigure a supply-chain has increased dramatically. Some technology solutions providers, such as ERP (enterprise resource planning) developers have continued to add marginal pull-based supply-chain functionality, but have often failed to understand that they are a 'node' in a network. Some call this the Microsoft syndrome, 'the desktop is the centre of the universe, not the Net'. Often overlooked, simplicity has more value today than at any point in history and a half decade of people buying services such as broadband Internet, IP phone service and web conferencing services, has made SaaS (software-as-a-service) an acceptable delivery vehicle for managing a demand-driven supply-chain.

Off-shore outsourcing and rapid consolidation in manufacturing industry have made the ability to effectively manage or participate in a demand driven supply chain (DDSC) the difference between survival and extinction for many companies.

Fixed costs in an ever-changing supply chain

The SaaS model establishes a demand driven supply chain with fixed monthly costs, paying only for what is needed and used. Cost of ownership in this environment is easily calculated and contained. The reluctance for this modality just a few years ago was security since security issues with the data is hosted outside the enterprise walls.

Demand driven supply chain SaaS solution providers, like North Carolina-based Datacraft Solutions, have overcome this former obstacle; the company provides a server farm with 100% redundancy and three OC3 lines. Data is 99.999% secure, and users have never experienced down time, thanks to a multiple UPS power backup system and 900 KW diesel Caterpillar generator. There are also biometric scanners for data centre security for the physical access security to the server farm.

Additional supply chain savings are derived in a DDSC environment by freeing up man-hours typically wasted in communication follow-up and manually managing the kanban cards on the floor. There are other savings realised in reduced telephone calls and faxes, but more importantly, clients see improved supplier response time and delivery performance that translates into

fewer stock-outs and lost production time in the plant.

A tier 1 automotive supplier materials manager noted, "We scan over 5000 cards a day, have just added 1500 parts from our tool crib, and have had zero part shortages since going live with the leading DDSC solution in just 3 months. Our inventory has reduced by approximately \$2,000,000."

According to Stephen Parker, CEO of Datacraft Solutions, "A DDSC technology provider must become a lean manufacturer's indispensable partner for building dependable and cost effective digital supply chain replenishment networks. Such providers are delivering a revolutionary process of automation solutions to lean manufacturers through a secure Internet gateway, while eliminating complicated, expensive, time-intensive software implementations, extensive training regiments and internal support nightmares."

Statistical Process Control: Impacting the supply chain

Other core elements impacting the supply chain can be viewed when a supplier of transmission components for automobiles and heavy equipment industries found that production could not keep up with customer demand. As the customer was threatening to award

the contract to another supplier, serious supply chain metrics had to be examined. The company could not afford to allow their competitor to gain a toe hold with the customers and needed to expand capacity. Employees in one department were working three shifts, seven days a week to meet production quotas, but were still falling short. Senior leadership assumed the only way to add capacity was to add machinery, a high risk strategy because of the large capital expense, coupled with increased headcount.

Senior leadership believed that if they knew more about the true capacity of the equipment in the department and sufficient rationale for the machine down time, they could optimise and improve equipment utilisation; with this knowledge they could make intelligent decisions about expanding the department. According to Evan Miller, CEO of Hertzler Systems, "We provided the company with a means to track each machine by the minute, recording setup times, maintenance and run time. This information was captured automatically in a database, along with detailed information from the machine operator. With this information stored in a central database, the company created a multi-level Pareto chart to help determine how many non-value-added minutes were spent on various activities such as fixing electrical problems or making adjustments.

While this may not seem like a direct supply chain issue, it is. It helped the company determine the most significant factors influencing non-value-added time; they discovered a significant amount of down time was involved in adjusting the machines which lead to collecting variable SPC (statistical process control) data on

each machine. The data revealed that operators had been over-adjusting their equipment, a time-consuming and expensive process.

Over a six month period the department went from a seven-day work week to a five-day work week, saving the company over \$100,000 in overtime wages. The company also increased its output by more than 25%, while minimising defects and scrap. By increasing productivity on existing equipment the company was able to avoid purchasing additional equipment by thus saving millions of dollars that would have been spent.

Supply chain expertise matters


Preston Blevins who has just been named Client Manager for Datacraft Solutions, noted: "Adoption of the virtual enterprise model has increased the number of participants in supply-chains and made them more complex to manage. Electronic kanban reduces communication complexity by sending electronic 'pull' signals within the enterprise and out to supply-chain participants." Blevins plans to join his experience in the lean supply chain with the best demand driven solution to optimise organisations. Blevins holds several APICS (Association for Operations Management) certifications including CFPIM (Certified Fellow in Production and Inventory Management), CIRM (Certified Integrated Resource Management), and CSCP (Certified Supply Chain Professional). Blevins serves on the International Board of Directors for APICS; he is also an active member with ASQ (American Society for Quality), which is heavily vested in lean management.

Blevins expertise become critical as supply chain providers are becoming specialists in the implementation of good business practices for enterprise resource

management, lean thinking, supply-chain management and e-collaboration. Blevins previously held many positions, including those roles associated with materials, manufacturing and plant management in a variety of manufacturing environments. Most recently Blevins served as Sales and Marketing Manager for BatchMaster Software and had previously worked with Oracle, Peoplesoft, Glovia and Cincom.

Definition of terms

The Wikipedia definition of supply chain says, "A supply chain, logistics network or supply network is the system of organisations, people, technology, activities, information and resources involved in moving a product or service from supplier to customer." The definition also suggests that a typical supply chain begins with ecological and biological regulation of natural resources, followed by the human extraction of raw material and includes several production links, for instance: component construction, assembly and merging before moving onto several layers of storage facilities of ever decreasing size and ever more remote geographical locations, and finally reaching the consumer.

Many exchanges encountered in the supply chain will be between different companies who seek to maximise their revenue, but may have little knowledge or interest in the remaining players in the chain. Whether pull-based demand driven functionality or machine tracked statistical process control, supply chain is endlessly dynamic and the capacity for metrics to assess the supply chain is infinite. 

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