

Chapter 1 : Reducing Manufacturing Lead Time

For equipment manufacturers, minimal lead time can be vital for maintaining a strategic competitive advantage. There's numerous benefits associated with reducing lead time such as improving service levels, improving client retention, enhancing productivity, and boosting profitability and cash flow.

A few years ago I had to decorate a new house. We went to a well-known furniture store and chose a couple of sofas and a coffee table. I was rather stunned to be told that the standard lead time for these items which were on display in the store was 16 weeks. Where are they coming from? So, I gritted my teeth and waited for what turned out to be 24 weeks before the sofa finally arrived. This little personal case study sounds extreme, but it is not. I constantly find companies quoting lead times even longer. In one case a European safety footwear distributor was dealing with a week lead time from suppliers in China, while in another an Australian manufacturer was waiting over six months for a chemical product sourced from Italy. Very few companies I meet would see anything abnormal about a raw material lead time of 12 weeks or more, when the goods were coming from the other side of the world. Apart from my obvious frustration at my 16 week wait for a sofa that became 24 weeks, what does it really matter if lead times are long? Surely you simply need to allow for the lead time that your supplier needs by ordering earlier. Perhaps your customers just need to forecast better! In fact, lead time is the single biggest factor influencing the performance of your supply chain. A longer lead time means that you will have to carry more inventory AND suffer an increased risk of shortage. Longer lead times make it harder to introduce new products or respond to market changes because you have so much inventory in the supply chain pipeline at any one time. It also increases the consequence of any quality problem as by the time the problem is found you may have weeks or months of stock already on the way from your supplier and sitting in inventory. Finally, just to compound the problem, the accuracy of any sales forecast decreases the further in to the future you need to forecast. Therefore, the longer the lead time, the greater the chance that what you order will not be what your customer wants when it finally arrives. Why is the Lead Time so Long? There is a lot you can do about your long lead times, but before you can reduce lead time you need to understand what makes it up. The first and most obvious thing to do is to really question why you are sourcing your materials from so far away. The economics of sourcing have changed dramatically in recent years as Asian wages, costs and currencies have surged. However, perhaps you simply cannot afford to bring production back home reshoring as its commonly known. What do you do then? The reality is that the actual time to ship goods from one part of the world to another is relatively short compared to the lead times that most suppliers impose. The table below from my forthcoming book shows the actual shipping lead times for a range of common routes:

Chapter 2 : Lead-Time Reduction in Lean Manufacturing

Lead Time Reduction Through Automated Inventory Management. DEAR's cloud-based inventory management software will automate almost every manual process you have to perform, and will help you collaborate and communicate with your supplier to reduce lead times and improve product quality.

However, original equipment manufacturers OEMs often encounter road blocks that extend lead times, which can slow down and otherwise negatively impact the manufacturing process. Whether you underestimated the amount of stock you needed or you forgot to place an order to replenish before you ran out of a certain fastener, bolt or other component, waiting for the new inventory to be delivered will eat up time and money. This is especially problematic if the parts are not commonly available, as the lead time can be weeks or months. There are a few different solutions to this problem. A vendor managed inventory VMI program allows you to automate stock replenishment from an off-site supplier who uses Just in Time JIT inventory management to order and deliver components based on your usage. This makes it difficult to predict when items will be delivered and even harder to coordinate production. While the latter is more likely to slow down operations, the former can be problematic as well. Ordering excess inventory strains your budget. Rather than ordering from various providers and receiving shipments at random, having one supplier means everything will arrive together. This can help cut down on shipping costs and make it easier to schedule builds and get them done with less hold-up. A number of factors can affect shipments, from raw material shortages to natural disasters to human error. Finding a supplier located close to your factory is not necessarily feasible. This is why working with a supplier who keeps inventory on hand in its warehouse and on order while continuously monitoring your usage is a best practice. The fewer shipments you have coming in, the less likely an accident or other road block will extend the delivery date. Too many processes When factory workers have to build every component of a finished assembly, it will take longer to complete a project. This means your output is lower and your return on investment ROI is less than if you were able to produce more finished products in the same time frame. You may be able to unburden your manufacturing team of some of these tasks by having subassemblies built off-site. Then, they will arrive ready to go, saving countless hours of production. Your products will take less time to complete, so you can make and sell more, resulting in more profitability and happier customers. Disorganized inventory Keeping all of the parts to complete a build on-site allows you to easily assemble the finished product. However, if your component supply warehouse is at all disorganized, you can lose a lot of time hunting down the items on your build list. This is especially the case if you stock surplus parts, as the excess inventory can make this process even more challenging.

This impacts lead time because after a handoff, the resource is busy with the last task, creating a queue. Increasing capacity reduces the queue time. Lead-time reduction is a game changer for most processes.

Gains in manufacturing performance can lead to gains in financial performance, which can result in increased access to capital, decreased cost of capital and increased investment in the manufacturing plant. An important measure of manufacturing performance is manufacturing efficiency. Minimizing manufacturing lead time and throughput time can improve manufacturing efficiency. Production Scheduling A production plan determines the product quantity to be produced on the basis of a demand forecast, which estimates customer demand for a product. In turn, a production schedule specifies when the product quantities will be produced. Capacity requirements planning is then performed to ensure that manufacturing capacity can accommodate the production schedule. Following the creation of a bill of material that outlines the product structure and the routing, which describes the movement of the product through the plant, the manufacturing lead time is calculated. Manufacturing Lead Time The manufacturing lead time is the time period between the placement of an order and the shipment of the completed order to the customer. A short manufacturing lead time is a competitive advantage; many customers want the delivery of their products as soon as possible following the placement of the order. Manufacturing lead time consists of wait time and throughput time. Throughput Time Throughput time is a measure of the time required for a material, part or sub-assembly to pass through a manufacturing process following the release of an order to the manufacturing floor. Throughput time or manufacturing cycle time consists of process time, inspection time, move time and queue time. Process time is the time period during which work is performed on the product itself. Inspection time is the time during which the quality of the product is confirmed. Move time is the time during which materials or works-in-process are moved from one workstation to another. Queue time is the period of time during which the product awaits transfer to a workstation, undergoes further inspection and subsequent manufacturing processes. Manufacturing Efficiency A manufacturing company may reduce throughput time by minimizing the time consumed by inspecting, moving and queuing activities. As a result of minimizing such activities, the manufacturing lead time is also reduced and delivery performance is improved. Manufacturing efficiency can be calculated by dividing process time by the total wait time, inspection time, move time and queue time. The resulting percent is the portion of production time that consists of non-value-added time, which is time spent on activities other than producing the end product. References 4 Manufacturing and Control: Production Planning and Control: Text and Cases; S. Mukhopadhyay About the Author Billie Nordmeyer works as a consultant advising small businesses and Fortune companies on performance improvement initiatives, as well as SAP software selection and implementation. During her career, she has published business and technology-based articles and texts. Nordmeyer holds a Bachelor of Science in accounting, a Master of Arts in international management and a Master of Business Administration in finance.

Chapter 4 : A 5-Step Approach to Reduce Time-to-Market | New Product Visions

So How Do you Reduce Lead Time? The key to understanding and reducing your lead time is a supply chain value stream map. Typically value stream maps only consider the process within one facility.

A 5-Step Approach to Reduce Time-to-Market Posted on by admin Getting products to market faster is a common objective for every company. While the motivation varies, there are clear benefits including capturing more sales, beating competition to market, providing market flexibility and maintaining a leadership position. Reducing time-to-market can also be a focal point for improving the overall innovation management process 1. In reducing time-to-market, the focus is generally on speeding up the development process itself. For some senior managers that translates into pushing development teams to work longer hours. While that might provide modest short-term results, it is not an effective long-term solution. Another issue is knowing which projects you should try to speed up. Not all projects are created equal. You have to understand the project risk profile 2. Getting products to market faster does no good if you are developing the wrong products in the first place 3. Figure 1 After considering the above, how do reduce project cycle time? Rather than a singular focus on development process speed, a better approach is shown in Figure 1 4. The natural tendency is to include every feature that anyone has ever requested when defining a new product. Consider developing a basic product first followed by a series of incremental projects to expand functionality and serve adjacent markets. This is the essence of a product platform strategy. An effective resource allocation process prevents system overload. Eliminate Steps One issue here is process inertia. If you have a documented phased development process, teams end up working for the process, not the other way around. Make sure your development process does not include time-consuming steps that add no value. Rely on external resources if practical. This might come down to a basic trade-off between money and time. It might be worth paying an outside organization to do a task, speeding time to market. Smart product architectural decisions can eliminate steps. That might include the use of OEM sub-systems vs. That decision might hinge on whether the knowledge embedded in that sub-system is key to customer value. If not, outsourcing might be the right decision. Parallel Processing For many products, system architecture should be viewed as a strategic decision and not treated as an afterthought. Purposeful decisions will permit many design tasks to be done in parallel saving time. Your development process should require parallel involvement of all functional groups, manufacturing in particular. Waiting to get manufacturing personnel involved until the product is ready to transition into manufacturing is an all-too-common problem. It slows the project. Eliminate Delays Perhaps the most important way to eliminate delays is more effective and timely decision making. This is particularly true at the senior management level. Team structure can eliminate delays by enhancing team communication. There are various choices including autonomous teams, light and heavy-weight team structure and functional teams. The type of project will dictate the best structure. New product development is no different. Speed Up After the preceding steps have been addressed, now the focus can be on increasing development speed. Having the right project manager for each project is an imperative. A second method is to front-load resources. Phased development processes emphasize incrementally adding resources as each phase concludes. Increasing resources at the beginning, however, can increase speed. Management often insists on adding resources late in a project. That can actually slow the project more than it helps. In summary, reducing time to market can be important for capturing more revenue and higher earnings but is no guarantee for market success if you are developing the wrong products. To reduce time to market, focus first on simplifying, followed in turn by eliminating steps, parallel processing, and reducing delays. Then, with sufficient resources, a skilled project manager can pull the right levers to minimize time-to-market. An excellent resource on reducing time-to-market: Smith and Donald G.

Chapter 5 : How Do you Reduce Lead Time in Your Supply Chain

tools for reducing lead time in the front be removed from production lead-time, a product could be produced in a very small Reducing non-active time directly.

But did you know that decreasing lead time is one of the easiest ways to gain an edge over the rest of the industry? Especially when dealing with cross-border shipping, one of the most attractive offers you can make customers is faster lead time. Keep reading to learn how to improve productivity, decrease shipping lead time, and speed up turnover in general. What is shipping lead time? Some businesses call this processing, while others refer to it as handling. How can you reduce the lead time? And since competition is fierce with some sellers guaranteeing next day delivery “ or even within the hour delivery! This is an even bigger issue for eSellers who are selling their products to customers around the world. According to a recent study done by UPS , speed of delivery was the fourth most important decision-making factor for online purchasers. Check out these fast tips for cutting down your lead time and staying ahead of the competition. FBA basically lets this eCommerce giant do all the dirty work for you, from storing to packaging and shipping. Since Amazon eats, sleeps, and breathes online shopping, they know the industry like the back of their virtual hands, so you have them handle everything for faster, smoother, easier processing. Using FBA gives eSellers advantages like: Follow these steps to get things started: Sign up for an Amazon account. Have your inventory shipped to Amazon. List your products in the Amazon Marketplace. When orders come in, Amazon does the work, and you just pay a fee. Seasonal items or slow to sell items may not benefit from FBA since these items can sit in the warehouse for months without movement. Simplify the supply chain One of the reasons processing takes so long is because eSellers get their products from many sources. Try consolidating your supply vendors so you can track shipments more efficiently. If you deal with a lot of specialty items, think about swapping these out for comparable standard items that are easier to stock. Be more organized Sometimes the little hiccups end up costing you loads of time and might even cost you your return customers due to dissatisfaction. Look at your handling process from start to finish, and see which areas can be tightened up. If this step is taking up more time than necessary, invest in a program that automates this annoying task. Cutting down your lead time will give you the edge your internet-based business needs to really soar above the competition. Find out other great ways to make your e-store shine brighter today.

Chapter 6 : Purchase Order Lead Time

Reducing inventory will decrease your lead-time. Excess inventory inherently presents a great deal of waste, not to mention quality issues (spoilage), storage requirements, investment of funds, limiting cash flow, among others.

Details , Modules Calculating your production schedule at high precision considering resource capacity is enough to start shortening production lead times. By synchronizing multiple processes in the schedule, Asprova eliminates unnecessary wait time between processes. If you need to shorten lead times more, you can split manufacturing orders or individual operations and assign them to multiple machines in parallel. To shorten lead times even further, you can overlap subsequent processes or reduce transfer batch sizes. Synchronized Finite Capacity Scheduling If the time each process takes is expressed as a fixed lead time as in the case of MRP , production lead times are simply the sum of the fixed lead times of the individual processes, and thus cannot be shortened. Operation Splitting If you would like to shorten production lead times even further, you can split lengthy operations and assign the split operations in parallel on multiple resources. There are many ways of expressing the way to split an operation, including the number of split operations, the number of parallel operations, split ratio, minimum lot size, maximum lot size, and lot size unit. Using these features, you can greatly shorten production lead times. Also, by splitting some of the processes of a manufacturing order that the schedule says will run late, you can shorten the production lead time of a specific manufacturing order so as to complete it before its due date. Time Constraint Method Transfer Batch Size The time constraint method refers to the method of controlling the time relationship between subsequent processes. ES End-Start pegs the end of the previous process to the start of the next process. SS Start-Start pegs the start of the previous process to the start of the next process. SSEE Start-Start-End-End pegs the start of the previous to the start of the next, and the end of the previous to the end of the next process. These are the time constraint methods that have been available up till now. Asprova adds two new time constraint methods to further support production lead time shortening. EES End Each-Start pegs a previous process consisting of a single operation to a following process consisting of multiple split operations so as to supply items just-in-time. ESE End-Start Each pegs a previous process consisting of multiple split operations to a following process consisting of a single operation so as to supply items just-in-time. This makes it possible to take advantage of operation splitting to the fullest in reducing lead times. This feature is used for cases where the quality of the product will deteriorate if the subsequent processes are separated by more than a certain amount of time. Resource Lock Optional Resource lock prevents other operations from being assigned to the resource used in the previous process until the next process is complete. This feature is used for cases such as where the previous process is carried out by a tank resource. Bottleneck-Oriented Scheduling In Asprova, you can perform scheduling while keeping fixed all operations assigned to bottleneck resources. Asprova will perform backward assignment on processes previous to the fixed operations and forward assignment on following processes, optimizing start times while shortening production lead times. External Setup By converting internal setups into external setups, you can shorten your production lead times while increasing the throughput on bottleneck resources and thence the productivity of your factory as a whole, as explained in TOC Theory of Constraints. In particular, changing setups for an expensive machine from internal setups to external setups will increase the productivity, which leads to profit increase.

5- lead time often can be reduced if items are transported immediately after they are manufactured or arrive from suppliers. there is a trade off between holding items until enough accumulate to.

And then one day less next month, and one day less the month after that? We recognize that some organizations simply cannot reduce lead times due to factors that cannot be changed such as offshore sourcing. But if you set stretch goals toward dramatic lead time reductions, you may surprise yourself with what you can accomplish. Below is a list of tips to help get you to explore the possibilities of lead time reduction: Suppliers will reward you with better delivery performance and maybe lead time reductions if you share your forecasted usage of their items with them. If you are communicating with fewer suppliers the quality of your communications can improve, which can result in a lead time reduction. The risk associated with a forecast error is offset by having the option of shipping alternate items. Purchasing is in the best position to know those items that are always available. Long lead time items replaced by commonly available items may only happen once the facts are known. Purchasing may be able to get sales, marketing, product developers and customers to see the value in having reduced lead times. Rather than having to keep stock of all the items in a kit, the lead time reduction benefit might pay for the extra cost of having the supplier provide a kit that includes all the items. The sooner the customer order is included in your planning system, the sooner you and your suppliers can respond. Anything from dedicating someone to order entry, to standardizing the order entry process, to using EDI to capture customer orders will go a long way to reduce order entry time. The time it takes to review and decide what to order as well as the time it takes to receive and make inventory available for use is all part of lead time. One way to get suppliers to deliver more often is to have a dedicated carrier make frequent, regular stops at a number of suppliers before arriving on your dock to deliver their product. The additional cost may be worth the reduction in both lead times and expediting costs. One strategy is to give preference to suppliers who are continuously reducing lead time so that your lead times continue to be improved. If you have some best practices that have helped you improve your forecasting and replenishment process, let us know about them. We would love to hear from you. You can reach us at education@lanhamassoc.com. Leave a Reply You must be logged in to post a comment.

Chapter 8 : What Is the Difference Between Manufacturing Lead Time & Throughput Time? | calendrierdel

Ideally, every supply chain strives to avoid long lead times in order to achieve a short lead time because it leads to increased customer satisfaction, favorable reviews, increased sales, decreased production, distribution costs, and higher profits.

The goal was to reduce the time to create and deliver a purchase order to a supplier from 3 days to 2 days, while also reducing the time to enter quotation information from 5 hours to 4 hours. These goals were successfully met in less than two months. Process analysis revealed substantial non-value-added activities, especially for approvals. There were six potential root causes identified, two of which were confirmed by data, while the other were refuted. These validated root causes led to elimination of two approvals and revision of the process to allow multiple parallel inputs, improving overall flow. A monitoring plan was established to track cycle times and respond if they become excessive. The improvements in this process can potentially be applied to other locations throughout the world. This can enhance the relationship with suppliers and allow for negotiating better price for ordering material items and services. Root Causes Analysis Data showed the purchase order approving process requires too many levels of approvers, a long time to check request codes, lots of time needed in entering an order, not having the supplier listed in the PO system, and not an easy way to re-order a specific item a previous order. Solutions Implemented Created a new approval flow process that only two signatures are required. Created a new form for ordering new item or services. Created a new form for PO requester to efficiently collect necessary information from a new supplier. Re-designed the order form to allow a requester to select items from previous order. Project Results Purchase order lead time has decreased from 3 days to 2 days. Order entry time has decreased from an average of 5 hours to 4 hours or less. Requesters have shown a higher level of confidence to inform requesters that PO will be issued within 2 days. Total cycle time from the moment the supplier provides the quotation to the moment they receive the corresponding purchase order. A supplier qualified by the purchasing department to be the primary source for ordering certain parts and service. A person beside the purchase order requestor to approve the issuance of a purchase order Project Charter Problem Statement In the last 3 months, we have been receiving complaints from the parts suppliers about how long it takes for them to receive a purchase order after sending us the quotations. Current cycle time average is 3 days. We could also lose revenue as some batches will not be manufactured on time for our customers. Goal Statement Reduce the cycle time to deliver a purchase order to supplier from an average of 3 days to 2 days or less. Reduce the time to enter quotation information into the PO system from an average of 5 hours to 4 hours or less by July 15th. Official quotation arrives from the supplier Process End: Deliver Purchase Order to supplier via fax or email In: Parts required for manufacturing each product, process steps, length of time for entering quotation into system Out:

Chapter 9 : 3 Reasons To Shorten Your Lead Time | Makerâ€™s Row Blog

Some organizations cannot reduce lead times due to factors that cannot be changed (i.e. offshore sourcing). But if you set stretch goals toward dramatic lead time reductions, and use these 10 tips you may surprise yourself with what you can accomplish.