**Applying Lean and Constraint Management to Distribution Centers**

Lean and constraint management are not only for use in manufacturing or production environments. Similar concepts can be used to manage and measure distribution centers or warehouses.

It is important to understand that idle inventory after some point in time is a waste – it indicates there was an issue or an error facing the company that instead of addressing that directly, inventory was obtained or produced to cover up the problem. Bad on-time delivery performance from a supplier, buy more inventory. Set-up times are too long, run more product. Don’t understand customer demand variability, produce a lot of everything so it’s all covered.

**Lean Concepts in Warehouses and Distribution Centers**

Move and wait time, excess production or purchases are key again. Also important is how much handling of the product is required once you receive it. The inventory on the racking is waiting. How long is it sitting there? Has it been moved to other locations while it was there? Why is there product sitting around for a long time? What percent of the racking space is empty or contains half-filled boxes?

Critical for inventory control and optimization is a reliable supply chain – right quality product delivered on time. Also critical, is the product hits your dock and is easy to get onto the racks – get the supplier to package your products the way you want them, not the way they want to give them to you. Understand or list all of the handling activities that you have to do from the time you receive the product until you load it on a truck for shipping to a customer. Remove as many steps in that process as you can. Make sure the steps add value for the customer. I have seen companies where they get gaylords of products and the gaylords are overstuffed, to the point that instead of three gaylords fitting into a racking section they can only fit two. That is another type of waste.

Here are a few things other to look for. Look at your supplier lead times. Look at the inventory turns of their products. Examine why you have more inventory coverage than the lead time. For example, if the lead time is three weeks, and your turns are 8 times per year, you have 6.5 weeks of supply of inventory. If you can get it in three weeks, why do you have 6.5 weeks of supply? This is just the starting point – there may reasons or root causes as to why that is. Address those and get then get the inventory in line. I worked at one company that could be print media in one day but had six weeks of supply on hand because they got discounts based on purchase order volume. Get your discounts based on annual purchases and get your product when you want it. It is like buying stuff at Target. Batteries come in packs of 40. You want two. Toilet paper comes in packs of “18 = 72”. You want six normal rolls, not 72. Shop somewhere else or soon you will need your own warehouse at home.

Focus on reliability, as I stated in the first article in this series. Get on time delivery of the right quality of product. Then work on case pack sizes, weights, handling issues, etc. It doesn’t do much good if you have the gaylords sized right but they come in six days late.

Look at different racking types to make sure you’re using the right ones. Many facilities have the basic orange and blue racks and then some smaller steel racks for the lighter items. There are MANY types of racking available. Get the right racking and put it in the right part of the building. Highest volume products should have the least amount of handling and be closest to the shipping or receiving areas. Take your A, B, C items, etc. and map the flow of them from receiving until they are shipped. If your A items are farthest from the shipping, packing, and receiving areas, move them.

**Constraint Management Concepts in Warehouses and Distribution Centers**

Constraints exist in every process. Remember, most constraints are caused by paradigms or policies. If you are out of racking space understand the root cause of why you have too much inventory. Not enough pickers – understand why picking rates are slow or why you can’t get qualified people. Constraints in the receiving area – how to schedule incoming shipments at the dock better.

Look at the entire building and understand how much underutilized space there is – including upward – distribution spacing is length x width x height. In most printing production aeras, space is just length x width because its unsafe and difficult to stack lithographic printers.

I worked with two different companies that stored books and pamphlets, annual reports, new hire on-boarding documents, etc. They all were stored flat. So, three one-inch books, took up 11’ of racking space. If stored vertically, they take up three inches. A 70% savings on space.

Understand the timing sequence for order fulfillment offered to customers. I have been in many companies where they offer same day shipping on orders received before noon. This creates a glut of orders at 11:50, a policy driven constraint. No work before noon. Running around in pure chaos in the afternoon. When we called the customers and asked them if this really mattered to them, in every case they said we would be happy if the product always arrived on time within 3-4 days. Self-imposed chaos because we assumed the customer wanted same day shipments. Errors frequently occur where assumptions are made. Work with facts.

**Summary**

Go through the list of the top 3-4 wastes typically identifies in lean improvement efforts (article 5 in this series, “Lean Overview”. Then do the same thing using the five-step process in identifying and managing constraints (the 7th article in this series, the first of three articles on the “Theory of Constraints”). Start your analysis from the point of where the customer can reasonably identify their demand, or need for your product, through your shipping of the product to them. Generally speaking this value chain is filled with waste that ends up costing your company money.

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**About the Author:** Bob Krausert is the owner of STRATE***X***, a Twin Cities based firm that works nationwide. Bob is the author of the book, ***Extreme Lean***, published in 2018. Bob has worked with over 60 printing companies, mostly mid-sized companies, but also with larger companies like Jostens and Banta, now part of RR Donnelly. During his career, Bob has trained over 12,000 people at both public and private events. Bob has been working with PIM since 2010, periodically providing educational seminars for its members. Bob can be reached at [stratexlean20@gmail.com](mailto:stratexlean20@gmail.com) or by phone at 612-743-8706. If you would like to have a specific question or topic covered in one of the articles, feel free to make the suggestion.