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Fast methods for warehouse optimization

by Rebecca Gill

When reviewing operational efficiencies and potential cost-savings initiatives, there is no greater savings potential than the areas of inventory control and warehouse management. Properly managing an organization's inventory and warehouse operations through best practice management will, without doubt, provide the largest impact on a company's bottom line than virtually any other functional area.

Disclaimer: When discussing WMS best practices, one caution must be made immediately. There is no such thing as a "typical warehouse." Each warehouse has some semblance of uniqueness that must be taken into account. That being said, there are things that typically happen in a warehouse that cause incremental cost for the organization. When reviewing WMS best practices, you must focus on these processes that typically happen within the standard warehousing environment.

Sources of incremental costs

After reviewing hundreds of warehouse operations over the years, our firm has come to a very basic conclusion. Most organizations hold unknown incremental costs within their warehouse in one of five areas.

These include:

- Too much inventory
- Incorrect inventory mix
- Inventory placed in non-optimal locations in the warehouse
- Inefficient pick or put away processes
- High reliance on paper within the warehouse

Optimizing a warehouse and implementing best practice techniques can have a huge impact if a company focuses on these five areas of waste.

Too much inventory

Maintaining an over abundance of inventory is a classic problem for the wholesale distributor. This issue is generally a result of one of these causes: incorrect forecast of demand, a belief that you must have a lot of inventory to service your customers, and an inability (or perceived inability) to procure product rapidly enough to service customer orders (classic 30-day lead time).

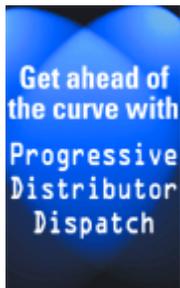
When best practices are deployed, the correct level of inventory is determined by several primary factors: customer demand, product lead time, and an organization's desired service level. A solid ERP or distribution package will include functionality designed to optimize inventory levels to meet the simultaneous results of high inventory turns and high order and line-item fill rates.

An example of this technique is the "Smart Pull System" which was developed by Arthur Hill, a well-known professor of

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Operations and Management Science at the University of Minnesota. Hill determined the key to maintaining proper inventory levels is a balancing act between maintaining conservative inventory levels, while also having enough inventory to adequately service a customer. A successful equation for obtaining this success focuses on three factors which include safety stock, minimum inventory, and maximum inventory levels.

It is preferable to use sales history to calculate all three of these parameters. Ideally, the desired levels are unique to a facility and take into account any shifts in demands due to seasonality and forecasts.

Today's enterprise solutions offer standard reports for helping users manage optimal inventory levels. By utilizing a top product listing report to review high-volume items, a user can focus on areas where the application's suggested minimum and maximum levels deviate from the existing levels. For those who lack such systems, mathematical formulas exist to manually calculate these levels, although the task will quickly become tedious.

Incorrect inventory mix

Stocking the wrong inventory occurs most commonly when a distributor sells products with multiple options or products which are similar in nature. The cause of such stocking issues is generally a result of one of the following factors. Changes in historical product mix demand, maintenance of all combinations of options in inventory, and lack of local ability to alter options on products are all underlying causes for stocking the wrong products.

If you are a distributor of items with long lead times of 30 days or more, there are a limited number of things you can do to remedy a mix issue. The best course of action is to alter your buying habits. This is a multi-step process which includes three tasks. First, create a continuous flow of product from a supplier in which you "re-order" frequently (weekly). This represents the replenishment cycle time for the item, which is less than the product lead time. Second, reduce inventory levels to be reflective of more frequent ordering. And third, reduce exposure to excess inventory potential.

If you are a distributor of items with short lead times of 30 days or less, you are similarly limited in the number of things you can do to remedy a mix issue. The best option in this scenario is to increase your ordering frequency and reduce the volume associated with each purchase. This allows you to reduce inventory levels to be reflective of more frequent ordering (an effectively reduced lead time).

A relatively quick correction for excessive inventory is to review existing vendor lead times and order frequencies per product SKU. For your top-moving products, review the vendor lead time, the order frequency with which you purchase the item, and the average volume of each purchase. If you are issuing purchase orders less frequently than one quarter of the lead time (for example, if the lead time is 30 days and you don't issue purchase orders at least once every 7 days), then you are maintaining excess inventory of the item and thus increasing the likelihood that you will have an incorrect inventory mix if demand patterns shift.

Incorrect non-optimal inventory placement in the warehouse

Almost every warehouse has some level of difficulty optimizing inventory placement. This occurs as a result of the following typical conditions: lack of prior analysis of inventory velocity history, lack of space in the warehouse, and limitations on storage space vs. special product needs.

The most typical problem is that inventory is not stored in the warehouse in a way that minimizes transit time for product picking. One solution is to incorporate the following three steps into your warehouse operations.

First, utilize a product sales history report to identify your high-volume items (pick the items that account for 80 percent of your total demand). Next, define the mechanism to be used for picking, such as picking by sales order or picking by zone. Finally, reorganize the warehouse so that the items identified on the product sales history report are located in the areas most adjacent to the shipping area, with the highest volume items being the closest. Although relatively simple in nature, these three action steps will minimize the total transit time to pick and ship an order, therefore increasing your productivity and decreasing your overall labor costs.

Inefficient pick and put away processing

Inefficient pick and put away processes occur most frequently in a warehouse where shipping is dominated by a sales order-based picking and small package shipping system. Typically, the picking process is managed by reviewing and fulfilling one sales order at a time regardless of the required product's physical location within the warehouse.

This can be solved by deploying a process called "cart picking" within your warehouse operations. This process can drastically increase warehouse productivity. The concept is simple. Instead of picking orders one by one, the warehouse personnel utilize a cart to pick a number of small package orders simultaneously. Many WMS packages have this functionality built into the processing routines and are available for use for small package shipping. In effect, the system will sequence the picking process so that employees visit a single area in the warehouse only once per "cart pick." Pickers place products for each order into bins within the cart. When driven by the system, a user cannot put the wrong product into the individual cart bins. Since a worker moves from picking one order to multiple orders in relatively the same time period, the productivity of the worker increases exponentially.

Reliance on paper in the warehouse

Most organizations have a difficult time eliminating paper as part of their routine daily processing. And although radio frequency and bar-coding is now a mainstream, this phenomenon of paper dependency is still particularly prevalent in the warehouse. Without doubt, excessive paper usage within a warehouse is not only labor-intensive, it opens the organization up to a multitude of user errors.

An optimized warehouse utilizes a WMS or ERP system to direct transactions and thus employee work actions throughout the day. From providing the next sales order to pick, to inventory replenishments, to cycle counting, a systematic approach to employee work flow is best managed through system-directed activities. When these activities are driven through a handheld RF device, the labor efficiencies substantially go up while user

errors go down.

Summary

When implementing a new distribution software package or value stream mapping existing procedures for possible improvements, the warehouse and inventory control functions cannot be ignored. These operational areas offer substantial cost savings, efficiency improvements, and reductions in user errors if best practices are adopted properly. They are without doubt, the fastest and easiest way to improve a company's bottom line.

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