Warehouse Coach

Improving warehouse performance

Item Placement – Repack Location Slotting
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Some time ago I was sitting with the Operations Director of a multi-branch wholesale distribution company talking about ways to improve staff productivity in repack picking. We noticed that the company productivity measurement system showed a wide range of picker productivity between branches. When we went to observe the people doing the work in a couple of the branches we noticed immediately how many differences there were between them, and began to see how those differences created the variation in repack picking productivity. After some discussion we developed a list of changes the Director planned to implement.

1. To reduce congestion in the picking and packing they implemented a change in the work schedules to stagger the start times for pickers;
2. To level the work load they eliminated cherry picking of the orders so that everyone had both easy and hard orders to pick;
3. To change the layout for the recommended application of shelving and flow rack; and
4. To minimize the out of stock experience at the pick position they modified the scheduling and logic of pick position replenishment.

Manual Slotting

A couple of months later, I visited the Operations Director again to talk about the impact of the changes they had implemented and explore next steps. The changes they had implemented clearly had improved productivity and throughput capacity, and yet we still saw significant differences in productivity rates between the branches. So again we visited some of the sites and this time we stayed a while longer, noticing the ebb and flow of the work throughout the day. During these visits we noticed congestion in the aisles and around certain picking locations. After talking with the branch managers, we discovered that they each used a different rationale to assign SKUs to pick locations. Each of the managers had considered a different combination of the following objectives in their decisions about item placement. Some of the objectives they used are listed in the table below.

Objective	Placement result
Minimize the risk of injury	Assign heavy items on the lower shelves
Optimize receiving put-away	Assign SKUs from a single vendor close together
Maximize picker productivity	Assign the fastest moving SKUs to chest-high shelf locations

Minimize congestion in the aisles	Assign SKUs so that the average number of daily lines were relatively constant for every shelving section across the entire pick line
Minimize product damage	Assign dense, heavy items to locations near the beginning of the pick path, and the fragile bottles and fragile bags to locations near the end of pick path.

We noticed that while all of these objectives and SKU placement decision rules seemed appropriate, some appeared to yield a higher level of productivity and reduced damage than others.

After I left, the Director began to work with his mangers to develop a standard set of location assignment rules that provided the best results for their distribution centers, and when we last talked he was very pleased at the results in increased personnel productivity, reduced damage, and increased pick accuracy.

As I continued to explore the importance of item placement with other warehouse managers I discovered a few additional rules for SKU placement that you may want to consider for reslotting your repack picking area.

Objective/Rationale	Placement Result
To provide a higher level of service to the retail customer	Assign SKUs sold and stocked within a department in the retail store near to each other along a pick path to minimize the movement of the packed carton or tote in the unload-stocking activity at the store
To reduce pick errors	Assign SKUs that have similar packaging or have similar names to locations that are separate from one another
To reduce the stretching or bending or distance walked to pick an order	Assign SKUs with a relatively low level of order activity at high or the bottom shelving levels and in shelving sections in aisles perpendicular to a main pick aisle
To optimize fill rate and pick location replenishment	Create a layout with several size pick locations, and assign high cube and

	high velocity SKUs to larger pick locations and low cube, low velocity items in smaller locations, etc. This subject is also discussed in my earlier article titled Improve Space Utilization

There are potentially many more decision variables including rules for flammable items, combustible items, SKUs with an order history that suggests the value in stocking them close to or separate from each other, etc.

Automated Slotting
Recently I worked on a project to build a new distribution center for a company that had 40,000 repack SKUs. As we began to discuss item placement in there repack area we quickly decided that there was no way we were going to be able to manually apply all the rules to this many SKUs, and the nature of the merchandise strongly suggested that the item placement was a subject that needed to be reviewed regularly. So we began to look for a computer application to process the data.

I found a vendor of Slotting Software and met with their salesman. In our conversation about the product and demand for it, I discovered that while the product appeared to be comprehensive, worked well, and was easy to use, the software had never sold well. In addition, he said that many of the companies that owned the software did not use it. It would seem that the manual methods are better or that the data does not support the investment in high priced software.

My learning and next steps
I have been thinking about the value of item placement and the work required for reslotting since then.   In my discussions with mangers, almost everyone agrees that analysis for slotting or reslotting could yield significant performance improvement, AND few are able to maintain the discipline to use it, except when setting up a new pick area. And yet those who do regularly refine their item placement, even with just a few SKUs every week, achieve and maintain a higher level of performance.

While purchasing and installing a slotting program or setting up a process for someone to analyze the SKUs and make recommendations for moves can be intimidating, I believe spending a few hours every week reslotting a few items manually will make a significant difference in the productivity and quality of your picking operation.

So to help you get started, I suggest you use the steps described below to start a reslotting process in your warehouse. Once you start with reslotting, and developed a process, teach someone what to do and assign them the responsibility to do it. You will notice a measurable difference. And you do not need to spend a lot of money for the software to achieve some benefit.

Basic Principles:

There are a couple of important keys to start an effective reslotting process.

1. Analyze the inventory regularly (perhaps monthly or even weekly) and when it is clear that some items should be moved, do it;
2. Make the moves and adjust the location records during a dead time, when no put-away, order or replenishment activity is happening; and
3. Move only a few items every cycle. I try never to move more than 4 SKU-locations in a day.

Getting Started

As with all my articles, I recommend that you start with what you can do without additional investment. In this situation, I suggest you start with reassigning pick locations based on order activity only.

Step 1 - Obtain a report of your repack inventory report listing just the SKU, the location number, and the number of order lines for the item over the last 30 days. If possible, get the report in an electronic file so that you can sort it several ways to help you determine the moves to make. If you cannot work with an electronic file, ask that the printed version be sorted in declining sequence of order lines for the last month, with the SKU with the greatest number of order lines in the last 30 days at the top of the list and the SKUs with the lowest number of order lines at the bottom of the list.

Step 2 - Select 2-3 SKUs near the top of the list that are in pick locations on the top or lower shelves and consider moving them to chest level positions; and

Then select 2-3 SKUs at the bottom of the list with pick positions that are currently assigned positions on shelves at the chest level and consider moving them to positions on the top or bottom shelves.

Obviously, by just trading the top three SKUs with the bottom three, the task should go quickly.

After you get some experience with location assignment based on activity, you can begin to think about accumulating additional SKU data (weight, dimensions, fragile, etc.) and using additional slotting rules. As the number of rules increase the process will become more complex and using a computer to automate the process will become more important. Collecting and using data such as weight and cube information (to calculate density), retail department (grouping items together), name, labeling or packaging similarity (separating items), etc. are all potentially useful options

Once you start this process, let me know your results. You can reach me a coach@warehousecoach.com. And if you would like some help with this reslotting work, contact me.