

Using Product Profiling to Drive Costs out of Distribution

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In the evolving age of mass customization and internet-base fulfillment, many of us are faced with a proliferation of stock keeping units (SKUs) in facilities, regardless of the industry. We also face continued pressure from top management and our competition to accomplish more in less time with fewer resources. One of the best-kept secrets in this context, whether for raw materials, components, assemblies, WIP or finished goods, is the importance of managing where we put things. This seemingly simple task has powerful implications for productivity, handling and fulfillment costs, inventory turns, service levels, carrying costs and shrinkage.

For simplicity, I've divided the subject into three areas of discussion. First is the nature of the places we create for storage (capacity, shape, where they are located and how they are identified). The second is what we store in those places (the kind of product, its popularity, its physical characteristics, its seasonality, etc.). The third, and probably the most often overlooked, is maintenance. Operators need to acknowledge that today, more than ever, slotting needs to be an on-going process, not a one-time event.

How best to store this item?

There are several factors that bear on the "how" question. The first element that comes into play is the mission or role of the facility. It makes a considerable difference whether the facility is to supply a single, attached plant or whether it provides full line distribution for other locations, including customers. Cross-docked items dictate a very different kind of storage than warehoused items. Are the loads to be handled unitized? Are they one or a few standard sizes or do they vary widely?

Obviously the physical size and shape of the available space also dictates a lot. Local fire, safety and zoning codes may also play a major role, depending on the material involved. For many, a third element is what is inherited - existing rack, shelving or other storage units, the current layout, and the kind and size of available material handling equipment.

Invariably, our existing facilities reflect more accurately the requirements of the past than of the present or future. The number of pick locations, the amount of reserve storage required, the physical qualities of the product or material and the importance of stock rotation are a few of the considerations which need to be made here. Knowing how many additional SKUs will be housed in a location, what quantities of that item will be on hand at any one time, how it will be packed on receipt and how it will be consumed enable management to anticipate future activity. It also facilitates advanced planning and helps management predict capacity requirements.

Where best to store this item?

Whatever the characteristics of the storage location, we need to match specific locations with specific products or product groups. Beyond fire and safety requirements, we need to take into account the way in which this product will utilize the storage space. If it is too large for the space, it will require more handling to break the unitized load and store it in two places. If it is too small, a significant amount of space will be wasted.

Another essential consideration is the popularity of the product. If it is in high demand, the closer it is located to its next destination (a position on the manufacturing line, a dock door, an injection point in an assembly process, etc.) the less the travel will be required to move it. Demand, for this purpose, is best measured as “hits,” - the number of times the item is requested, as distinct from how much is requested. (Twelve trips to retrieve twelve items is very different from two trips to retrieve six units each time.)

Two other factors impact the ease of retrieval. First, if all the most popular items are stored in close proximity, the likely outcome is high congestion. Some trade off has to be made, therefore, between less travel and less congestion.

The vertical placement of the product also affects the difficulty of retrieval. Given five shelves or levels on which an item could be stored, as an example, the most popular ones are best stored on the level(s) where they are most easily accessed. When a level represents a pallet height, the most easily accessed level is usually the floor. It also takes the least time (vertical travel takes longer). When the vertical levels are case flow or bin shelving, the “best” locations are usually between the waist and shoulder level of an average person, sometimes referred to as the golden zone because it is ideal for picking.

Is this Still the best way and place to store this item?

As noted at the outset, maintenance of item slotting needs to be an ongoing process. When seasonality, promotional programs, weather, product obsolescence or other factors change the demand for a product, the cost to handle and replenish, let alone the best utilization of space, strongly suggest relocating that item. Only by managing the process on an on-going basis, using a formal, scheduled review process, can optimal slotting be maintained. There is an inverse relationship between slotting review frequency and operational costs (more review usually equals lower cost).

For most warehousing operations, it is valuable to periodically review entire zones or sections or even the whole facility. Organizations which are seasonally driven, or where large portions of the items change over within a few months, should probably review slotting even more frequently.

Systems can help a great deal in this context by tracking hits and replenishments. Using exception reporting, the products that need attention (those which fall outside a defined range for that location or zone) will surface quickly. There are several software applications available today which greatly improve the level of refinement that is possible. They also can greatly reduce the time required to arrive at the preferred solution.

Why expend the resources to re-profile?

Operational costs, customer service levels, inventory performance, and carrying costs are all impacted by item profiling. When replenishments become too numerous, handling costs go up, pickers are less productive, product damage increases, service levels suffer and turns are reduced. When unit loads have to be split due to wrong slot size matches, the risk of "lost" product increases, impacting many of those factors again. While an aggressive slotting program will not solve all of those problems, it almost always impacts them very favorably.

The tradeoffs for those benefits are the one-time investment cost and the on-going labor cost to execute the program. Single site license fees and implementation costs may run as high as \$100,000 to \$125,000 or more, depending on the specific application and the context for its use. Training usually takes of a couple of weeks. The most time-consuming part of the process is usually defining storage equipment, configuring the system for the existing layout(s) and defining strategy and rules for optimizing the location of SKUs. Inventory data is loaded into the software from existing systems using standard industry file formats.

Regular work with the software can be very effective in sustaining maximum space utilization, while minimizing travel to and congestion around the most popular items in the warehouse. Depending on the volatility of the environment, operations with more than a few thousand items or those with several sites and a significant degree of change in demand will find this application easily justified. Payback in a high volume, highly dynamic environment can be six months or less. The ROI calculation can include not only the cost of production delays, but inventory performance, increased operational costs and even lost sales.

For anyone being asked to continue to find ways to wring cost dollars out of their segment of the supply chain by making on-going improvements, slotting may be an untapped opportunity that is close at hand.

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