HighJump™

SUPPLY CHAIN NETWORK SOLUTIONS

GAINING EFFICIENCIES WITHIN THE WAREHOUSE

Setting Up Your Warehouse for Optimal Distribution

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INTRODUCTION

Gaining efficiencies within the warehouse is paramount to maintaining **sustainable growth** and meeting current and evolving consumer demands. Implementing process improvements that can be easily applied within your distribution center today will result in immediate benefit, both tangible and intangible.

Management has **three primary tools** at their disposal to help **improve productivity**, **velocity**, and **customer service levels**: labor, space and equipment. As you begin to think about process improvement ideas and changes to make to your operations, you will need to prioritize the projects based on impact of these value levels.

This eBook will explain how to set up your warehouse for optimal distribution so your organization can capitalize on any opportunities to grow.

KEY POINTS TO KEEP IN MIND:

- Labor costs typically consume at least 60% of warehouse budget
- Pick labor can consume 70% of warehouse labor
- In a typical supply chain the warehouse is the last place to touch the product and potentially impact customer service levels and perceptions
- You are paying for space even if you don't use it, or if you use it for a non-active product
- As shorter delivery lead time expectations become the norm, your operations need to be setup and organized to be able to rapidly respond to changes

SPACE UTILIZATION

Chances are you are either out of space in your warehouse or getting close to it, in which you may be considering expanding your warehouse by building a new facility or leasing outside space. However, there are many proven, low-cost concepts you should consider to improve utilization of your existing space.

BIN CHARACTERISTICS

Choosing one storage philosophy over another means making a number of trade-offs between space, accessibility and material handling efficiency, **Table 2**. Compared to the use of space in a random strategy, a **dedicated bin strategy** will require 65-85% more space. With the escalating cost of money, few companies can afford to design fixed bin storage warehouses. This factor alone can justify the investment in technology to help manage a random storage warehouse. .

- **Fixed or dedicated bins:** Each SKU is assigned to a specific bin where it will always be stored. No other SKU may be stored in that bin, even if the bin may be empty. Use of space with fixed bins is poor because excess empty space and bins is common.
- **Random or floating bins:** Any SKU may be assigned to any available storage bin; an SKU in Bin A one month might be in Bin B the next. The quantity of items on hand at any time will be the average amount of each SKU. This technique is space-efficient because the space requirements are only 15% above the average amount of inventory expected on hand.
- **Combination or hybrid bins:** Based on a mix of fixed and random storage.

	Dedicated	Random	Combination
Use of Space	Poor	Excellent	Good
Accessibility	Excellent	Good (if using technology)	Good
Material Touches	Good	Good	Poor

Table 1: Comparison of Storage Philosophies

- **Varied bin sizing:** An often overlooked method of reducing space requirements is optimizing product bin sizes. Many warehouse operations store and process a wide variety of product types and sizes to effectively accommodate this variety. It is desirable to provide a variety of storage types and sizes. Trying to utilize only one type of storage media and bin size with a variety of products can lead to inefficiencies and low overall cube utilization.

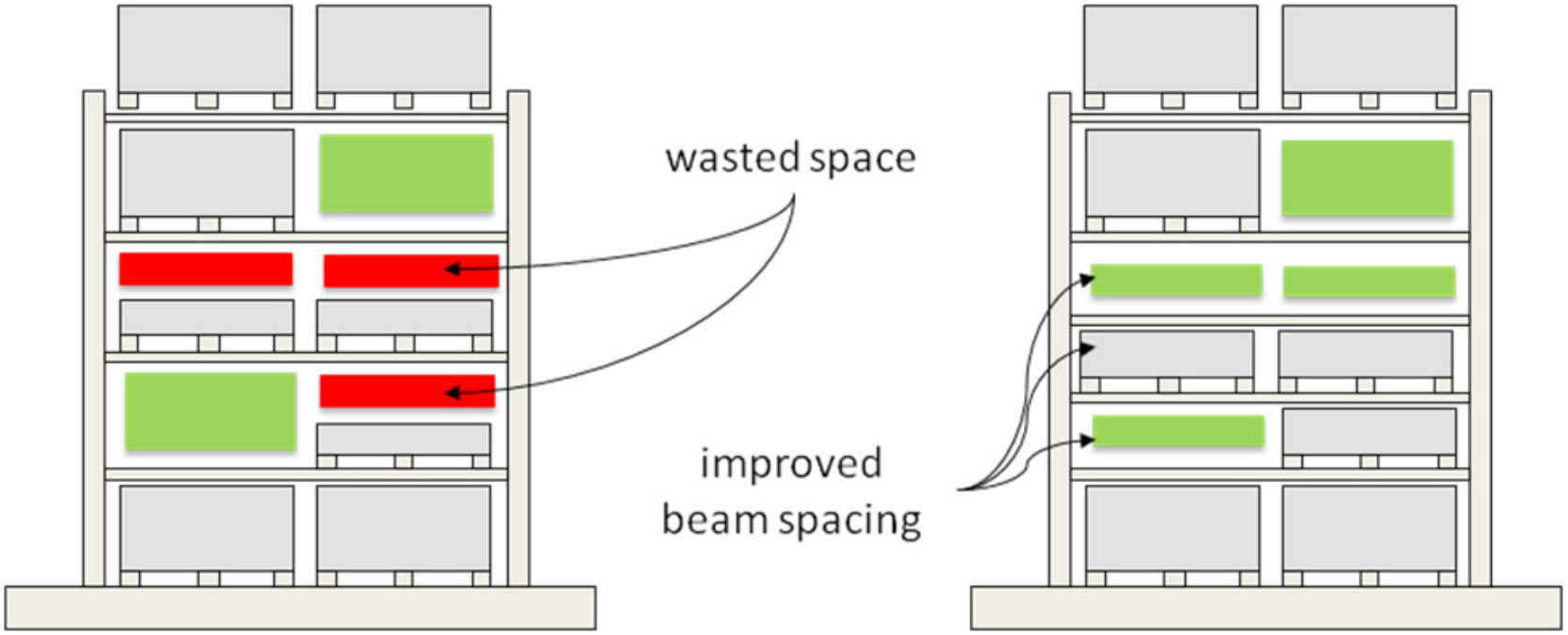


Figure 2: Impact of Varied Bin Sizing

LAYOUT CONSIDERATIONS

- **Storage Density, Velocity and Accessibility:** Reducing aisle widths is a good way to improve space utilization. Thought should be made to the number of aisles used in your facility. The number of cross aisles and people aisles should be assessed to maximize their utilization. **Table 4** compares various storage utilization improvement concepts against expected velocity and capacity constraints.

Concept	Velocity	Capacity
Dock Space	More	Less
Aisles	Wider	Narrower
Cross Aisles	More	Fewer
Rack Openings	Larger	Multiple
Storage Lanes	Shallower	Deeper
Processing	Larger	Smaller
Philosophy	Use the Floor (Bulk)	Use the Cube (MHE)

Table 3 - Storage Capacity/Velocity Comparison

- **Aisle to storage space ratio:** One way to reduce the ratio is to block stack pallets of product on the floor two or three levels high. Block stacking requires enough inventory of the same SKU and product that can be stacked without damage. Floor stacking pallets four or five deep is common in operations with high stackable inventory per SKU. The ability to deep stack pallets with few aisles manages the isle/space ratio to your advantage.

- **Aisles:** Reducing aisle widths is a start to optimizing storage space. The type of lift truck used and the pallet parameters will influence aisle widths. However, with an assessment of widths, you may identify aisles that can be reduced using the same equipment.

- **Think cubic feet:** The impact of using vertical storage space depends on your current storage clear height and product stack-ability restrictions. In addition, vertical space within a pallet rack structure should not be wasted. The lift-off height provided between the top of the load and the beam should be adequate but not excessive, typically ranging from 3 to 8 inches.

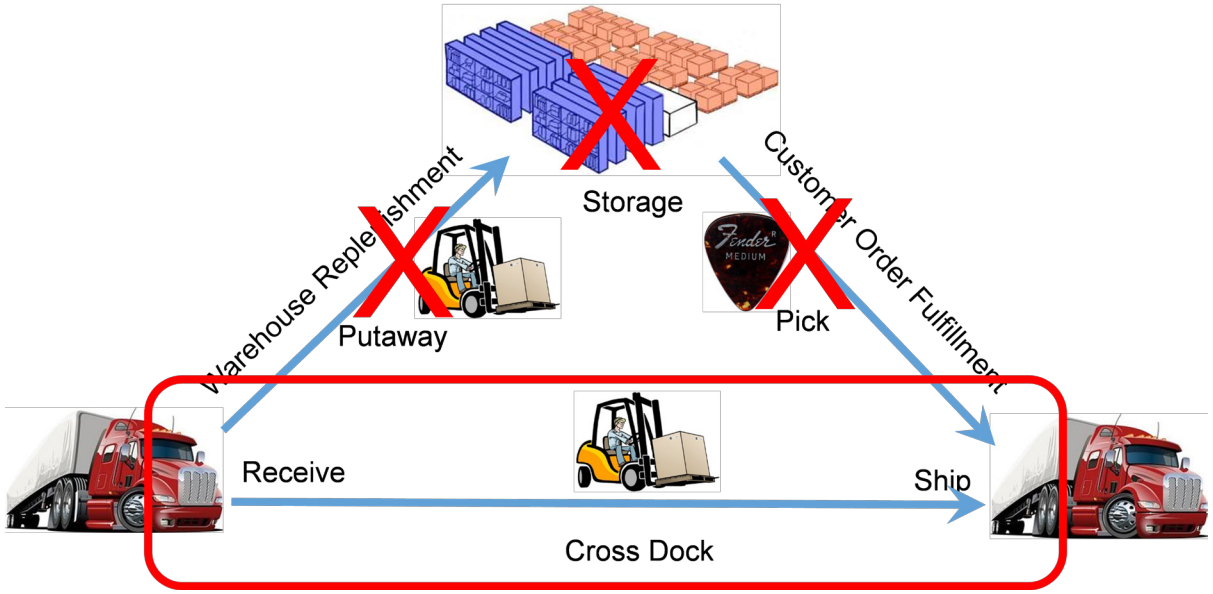
- **Rack over doors:** Most receiving dock doors are spaced far enough apart to permit racks to be erected and span the door openings. These racks can provide several levels of product storage above the clear height of opening. These racks can be used to store slow-moving products.

- **In-rack tunnels:** In warehouses where pallet rack is used, a missed opportunity exists if rack "tunnels" are not used over cross aisles. Most warehouses try to align rows of rack on the side of a main or cross aisle. The area above these aisles is wasted unless racking is installed bridging the aisle between the ends of rows or rack. Even allowing clearance for lift truck traffic, it is possible to add two or three levels of pallet storage.

CROSS DOCK IF POSSIBLE

The **best way to improve** space utilization and pick labor productivity is to not do it. Don't put product into storage and don't pick orders.

Cross docking is a logistics procedure where products from a supplier or manufacturing plant are distributed directly to a waiting sales order with marginal to no handle or storage time. You can potentially reduce storage requirements and improve overall labor productivity by moving product from the receiving dock direct to an out bounder order. This practice is best supported with some form of technology to match inbound receipts and open outbound orders.



DEFINE YOUR ORDER PROFILES

The first step to managing an **efficient warehouse** is **defining your order profiles**. This is done by reviewing six-to-12 months of order history to assess and identify patterns around order size and product movement.

A typical wholesale distributor warehouse will have at least two or three different order types. The table to the right is an example of a HighJump warehouse management system (WMS) customer who sells through its own webstore, to miscellaneous distributors and through large big-box retailers. We see 15 percent of their orders are medium-sized, multi-line (two-10 lines); 35 percent of their orders are for big-box replenishment; and 50 percent are typical eCommerce single-line, single-unit type of orders. With this knowledge of their order types, they were able to build specific pick processes around each order type to improve pick labor productivity while exceeding prior customer service standards.

If you do have different order types and are picking each order the same way, you are **sitting on a gold mine** of opportunity to improve labor productivity and throughput. For example, picking a single-line order is significantly different than picking a larger multi-line, multi-item order. There are different handling characteristics, packaging needs and labeling requirements.

Type	Description	% of Orders
I	Single Line, Single Unit	50%
II	Large multi-line (100+)	35%
III	Mid range multi unit	15%

FIND THE RIGHT PICKING METHOD

A few key ideas to keep in mind as you consider different picking strategies:

KEEP PICKERS PICKING…NOT WAITING

Keep a queue of orders available for the picker. This requires an effective replenishment strategy if you are using a forward pick/reserve storage layout.

KEEP PICKERS PICKING…AND NOT DOING OTHER TASKS

Do not bog pickers down with other tasks such as carton erection and taping, labeling, wrapping, adding dunnage, etc. Pickers are typically your most skilled warehouse resource.

MINIMIZE PRODUCT TOUCHES

Ideally, your pick process is designed so that there is sufficient accuracy at the time of picking to eliminate the need for subsequent checking and repacking. Each unit of product is touched only by the pickers' hands before the carton is sealed and transported to an outbound truck.

MINIMIZE TRAVEL

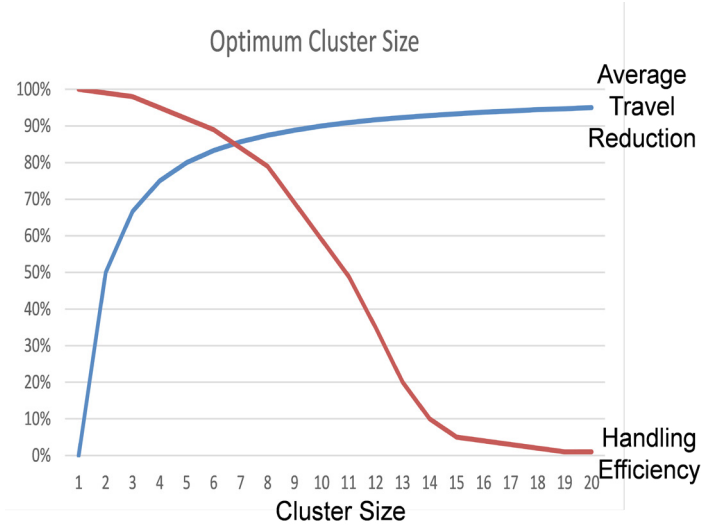
Pick from properly-sized pick modules on both sides of the aisle. Segregate slow movers from fast-moving SKUs to avoid repetitive, unproductive travel past those items. Consider picking slow-moving SKUs from reserve storage rather than forward pick bins. Seek opportunities to batch pick many smaller orders in one trip. And pick all one-line, single-piece orders together since no sorting is necessary to break them down into a discrete order level.

PICK SMARTER: WAVE/CLUSTER PICKING

With wave picking, multiple orders are grouped into small groups or waves. An order picker will pick all orders within that wave in one pass using a consolidated pick list. Usually, the picker will use a multi-tiered picking cart and maintain a separate tote or carton on the cart for each order.

Wave sizes usually range from four-to-12 orders per wave, depending on the average picks per order in that specific operation. In operations with low picks per order, wave picking can greatly reduce travel time by allowing the picker to make additional picks while in the same area. In high-volume operations, wave picking is often used in conjunction with zone picking and automated material handling equipment. In order to get maximum productivity in wave pick operations, orders must be accumulated in the system until there are enough similar picks to create the waves. This delay in processing may not be acceptable in same-day shipping operations.

Pick cart design is a key consideration. The number of cartons and the size of each one could be limited by aisle space in the warehouse. Space could also cap how many orders can be picked in each wave.



When designing wave picking workflows, you must balance the trade-off between travel time/distance reduction with decreased handling efficiency.

PICK SMARTER: BATCH PICKING

Batch picking allows the picker to collect all the products required in a wave before packing them into cartons. For each pick, you are guided to the pick bin and told the product and quantity to pick but not the cartons into which to pack the items. Instead, you place all the products onto a pallet, cart or totes. You then bring them to a sorting area, where you segregate them into cartons for the appropriate orders.

This method of picking is particularly well-suited to a warehouse layout that is not conducive to bringing cartons through aisles of pick bins. It is also an efficient way to pick a large number of orders (each with a few lines), as it lets you split the picking and packing functions between two people.

Similar to wave picking, the primary benefit of batch picking is reduced travel time per order. However, process benefits should also factor in the increased space and labor required to perform the secondary pick process at the pack stations. Pick labor versus pack labor is the balance to measure here.

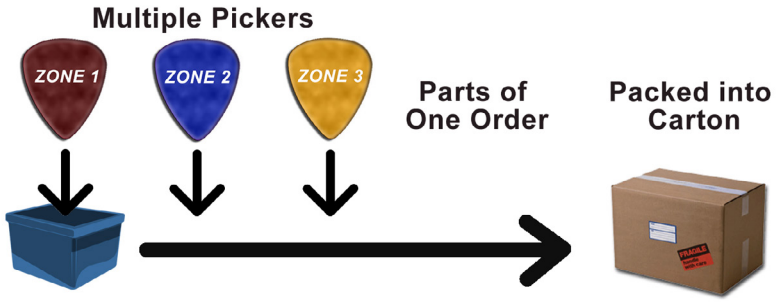
PICK SMARTER: ZONE PICKING

Under this method, the warehouse is broken up into individual pick zones. Order pickers are assigned to a specific zone and only pick items within that zone. This method divides up aisles of bins so that individual pickers only work in a specified number of aisles.

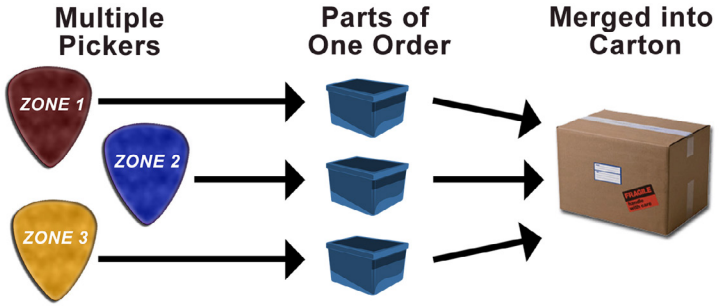
Zones are usually sized to accommodate enough picks for one or two order pickers. Zone picking is most effective in large operations with high total numbers of SKUs, high total numbers of orders and low-to-moderate picks per order. Separate zones also provide for specialization of picking techniques such as having automated material handling systems in one zone and manual handling in another.

This can be done sequentially or simultaneously. At a warehouse using sequential zone pick, one picker pulls all the products for orders in one zone and it's then handed off to the next zone, either via conveyor belt or manually. For simultaneous zone pick, multiple workers would select items for one order at the same time and then consolidate them. The primary benefit is that an issue in one zone does not delay the entire order.

Sequential Zone Pick (Pick and Pass)



Simultaneous Zone Pick (Pick and Merge)



PICK SMARTER: REPLENISHMENT PICKING

Replenishment picking merges the concepts behind batch picking and reserve storage/forward picking, which involves separating the warehouse into a storage (reserve) area and a picking (forward) area. This approach tends to optimize overall space utilization and pick labor productivity. Space utilization is improved by storing product in bulk in dense areas, while pick labor productivity is improved by keeping pickers working in smaller forward pick zones that typically hold smaller inventory volumes. This creates "strike" zones that are more accessible and ergonomically friendly.

Replenishment quantity and timing is driven by the projected number of orders over a given time frame (usually a day). Once a group of orders for the day is created, the orders are replenished, in batch, to the forward pick area. At the end of the day, the forward pick area is picked clean and ready for the next pick cycle.

SHIPPING MADE EASY

Shipping Accuracy

Research found up to two percent of received shipments are in error. Further research found the typical error averaged $200 to correct on both the shipping and receiving ends. These may seem like small figures, but when multiplied by the number of shipments handled each year, the hidden costs can be high. A typical business can discover it is spending as much as $30,000 or more just to correct inaccurate shipments. Implementing a WMS can virtually eliminate shipping errors thanks to its near flawless accuracy.

Integrated Shipping

A sophisticated shipping solution will allow you to find the best method and print out a label from a desktop or a handheld scanner. It's even possible to print parcel shipping labels in advance of the pick, apply the label to a carton, pick the order and stage it for shipping. This works well when you have dimensional and weight information about an item and are shipping small-line item numbers or full cases.

Pick to Ship Label

Flexible software is critical in this realm because it allows for a combination of the workflows explained earlier in the same distribution center. A shipping solution should automatically find the cheapest and/or fastest shipment provider because it is integrated with your ERP or eCommerce platform. This gets items out the door faster while making sure you are making the best financial choice.

TECHNOLOGY IS YOUR FRIEND

Once you understand order profiles and develop a plan to match pick strategies to those profiles, a warehouse management system (WMS) workcenter will group orders into those profile types and release them for picking. This is ideal for efficiently managing eCommerce orders.

Once released, this system provides detailed information on the status of each order. Statuses include:

- **Ready to wave** – Enough inventory is available in a pickable bin to fulfill the order.
- **Held replenishment** – There is not enough inventory currently available to fulfill the order.
- **Being picked** – Someone is in the middle of putting the order together.
- **Record shipment** – Picking is completed and the order is awaiting shipment.

This software will also allow you to prioritize orders based on sortable information. Priorities might include:

- Finding all single-line, single-unit orders so you can assign them all to a single picker at once.
- Emergency pickups to get out to the customer service desk quickly for will call.
- It's well into the afternoon and FedEx picks up at 5 p.m., so you need to release all of those orders for picking ASAP.
- A new customer that requires specific product labeling must be picked and sent to the re-work area.

Ultimately, the WMS provides visibility that allows you to find the most efficient workflows and make sure no part of the warehouse is overburdened. This is a necessity with eCommerce because of tight shipping windows and an increasing number of single-unit and multi-SKU orders.

To learn more about gaining efficiencies within the warehouse, check out this white paper, Ideas for Improving Warehouse Performance.

HighJump™

SUPPLY CHAIN NETWORK SOLUTIONS

In almost every industry, buyers are becoming more fickle, and more demanding. For logistics executives, effectively meeting buyer needs has become a relentless quest for speed and agility. Traditional supply chain solutions – siloed, complex and hard-to-implement – no longer suffice, as competitors find ways to deliver goods faster and more profitably.

In today's "now" economy, HighJump helps you stay agile, with adaptable, connected solutions that harness the power of your trading partner community. From the warehouse to the storefront, from the desktop to the driver's cab, we can help you achieve new levels of supply chain responsiveness, performance and profitability.

HighJump's suite of warehouse management, business integration, transportation management, and retail/DSD solutions form a complete, powerful and adaptable platform that allow you to drive growth, customer satisfaction and revenue.

HighJump: supply chain accelerated.

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