



The Economics of Order Picking

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EXECUTIVE SUMMARY

Order picking is the function that warehouse professionals consider to be the most critical and the most difficult in their distribution operations. It requires the most resources, is the most customer-sensitive and can be the most complex of the warehousing functions. Nonetheless, customers continue to increase the measurements of order picking and decrease the size of their orders. What defines order picking, what drives the changes in order picking, what resources are affected by the changes, and what can be done to minimize the impact of changes in order picking requirements? This monograph will attempt to answer these questions along with:

- How did order picking evolve and where is it going?
- What industry trends are challenging the order picking function?
- What realities must be understood to make significant order picking improvements?
- What are the trade-offs that can be made to create an effective order picking operation, maximizing all available resources and strengths?
- What to compare in order to wisely choose among the many available alternatives and design the best order picking operation?

However one approaches and studies the order picking function, without a complete understanding of all order picking challenges, their knowledge will never be complete. This is because by the time a complete understanding of all industries is obtained, most of the demands placed upon these industries will have adapted to a changing world of warehousing and distribution. So, in order to truly begin to understand the economics of order picking, a good understanding of order picking and warehousing is required.

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1.0 THE HISTORY OF ORDER PICKING AND WAREHOUSING

When mankind first walked the earth the primary mechanisms for survival centered around hunting to obtain the daily essentials rather than simply storing materials for future use. As mankind evolved, the process of gathering food and storing it for future use became prevalent. Hence, “the gatherers” created the first bulk warehouse system. Although this system was no better for fresh fruits and vegetables, the storage of grains and nuts was much improved.

As society moved forward, mass production during the industrial revolution forever changed the way in which we obtained things. During this time, the use of crude warehousing and random storage methods were first implemented, and if you wanted customization, you had to do it yourself. Our ancestors eventually discovered farming and the benefits of variety. The “farmers” learned to grow multiple varieties of food. This led to trading and even more warehousing. In addition, the bulk volume of the items traded and handled decreased rapidly as more varieties were created, thus, leading to more complex storage and retrieval methods.

In a modern society, the movement of whole pallets of goods was the general rule of thumb in both order picking and purchasing requirements. Finally, someone came up with the notion that if we offered mixed pallets of products to decrease the quantities of slower moving product necessary for our customers to buy, our customers would buy more

overall product from us. This created chaos in the simple world of warehousing and distribution as information and time required to pick cases increased dramatically.

After learning to hunt, gather and farm, our ancestors became used to having choices. This created a society where individuality and customized materials were the requirement rather than an exception to the rule.

Today, we like to refer to this level of service as direct-to-store or direct-to-customer delivery. The capabilities required to provide this level of service include real-time information, accurate inventory records, broken case picking capability and 24-hour order turnaround. It is extremely expensive and difficult to provide everybody exactly what they want, when they want it, and without forcing them to leave their homes.

Incredible as it might sound, we have still only begun to explore the possibilities of warehousing and distribution. Today, the Internet is poised to change the face of distribution once again, much the same way that air conditioning changed the delivery and storage of perishables. Along with these changes a new set of economics centered around distribution and order picking have evolved.

2.0 WHAT ARE THE ECONOMICS OF ORDER PICKING?

The term “economics of order picking” is a way of describing the methods we use daily to balance the costs of selecting the correct items from a storage location which include equipment, information systems,

space and labor against customer service requirements. How each of us approaches this depends primarily on the type of products we are handling, their value, the space we have available and the objectives of our organization.

In economics, the most common law is that of supply and demand. This law states that as demand increases, the supply will decrease and as demand decreases, the supply will increase.

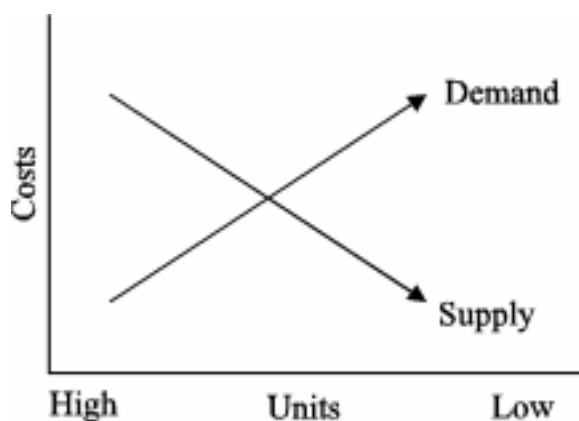


Figure 1
Standard Graph of the Economic Law of Supply and Demand

There is no simple law for order picking. Each component of the costs of order picking have multiple influences. In fact, there are no two operations with the same exact order picking economic influences. You will not find a “magic formula” to tell you how to pick orders within these pages, but rather, the methods for evaluating the various influences and costs associated with order picking. The economics of order picking tries to define the influences that affect costs and overall order picking strategies, which may be applied to

reduce each one. The process of building the perfect picking system, much like the process of selecting and aging the perfect grapes for a fine wine, is slow and tedious work, yet in the end, the result is well worth the wait.

3.0 THE DEMANDS OF ORDER PICKING

The law of economics states that as demand increases, the supply decreases. When analyzing order picking, the critical first step includes defining the demands affecting order picking. The primary forces which define order picking demands include:

- Customers
- Sales and marketing
- Accounting
- Organizational cultures
- Regulatory agencies

Customers are the primary driving force behind the majority of all order picking requirements; although, the rest tend to complicate the process significantly more. The ability to get the right product, at the right time, to the right place in good condition sounds simple enough, but this is not always possible within the standards set by customers and the constraints set by everyone else.

One interesting trend involves customers moving completely away from warehousing and shifting the entire supply chain management responsibility back to their suppliers. The ability to electronically transfer sales information through the use of point-of-sales systems as an item is purchased or used

eliminates the time required for customers to accumulate and place orders. This, coupled with an ability to deliver almost any type of goods anywhere in the continental United States within two to five days of order placement, has encouraged customers to eliminate their own on-site safety stock and to order less goods more often.

Additionally, the use of point-of-sale, real-time information technology generates significantly smaller and more frequent orders from customers. Today, instead of supplying pallet quantities of product to large customer distribution centers and manufacturing plants, there is a trend to ship case or less-than-case quantities of product to individual customer outlets or Just-in-Time production environments. Realistically, the day of the on-site warehouses for both manufacturing facilities and retail outlets has passed.

In order to accommodate shrinking user inventories, a less than 24 to 48 hour order fill time must be the goal of every distribution center and warehouse. This does not hold true for large make-to-order customized products, which by their nature have long lead-times, or for imported items stocked to meet customer requirements.

Of course, not all customers will give up their distribution networks. Instead, customers are moving to smaller distribution centers, which are, or will be, primarily crossdocking and/or sortation centers. In this environment, the ability to electronically receive and ship orders will be a prerequisite to doing business. In order for crossdocking by customers to be effective, the product must be easy to unload. Hence, a new twist to order picking becomes

picking and loading orders in the unload sequence and picking orders to coincide with tightly scheduled customer pick-up times.

A final customer demand trend has to do with the customization of both packaging and labeling. Instead of being able to pick 100 pieces of ABC brand widgets, the picking process consists of picking 10 widgets of a customized brand for each customer. For example, the company distributing the product wants their logo or store label on the widgets, rather than the ABC brand label. This creates a proliferation of the number of unique products in the warehouse, making order picking more complex and time-consuming. If custom labels are not required, the placement of price stickers and customer-specific bar-code labels may be required before packaging either by the order picker or at a secondary purchasing operation. Besides the movement toward customized labels on standard packages, the creation of a customized package consisting of several different products then creates even more product codes and inventory to manage.

A second primary driver of demands affecting order picking comes from both the internal accounting departments and from government agencies in the form of tracking and labeling requirements. In today's order picking environment, picking accuracy rates nearing 99 percent are not uncommon. The day of 100 percent pick accuracy in any environment involving human labor continues to be nearly impossible to reach. Even in a fully automated environment, a 100 percent accuracy rate is realistically not feasible. However, goals exceeding 99 percent plus

consistency must be the standard of every organization in order to meet both internal and regulatory demands.

In summary, the demands affecting order picking today include:

- Customer product warehousing
- Supply chain management
- Up to 48-hour order fill time
- 100 percent + picking accuracy
- Customized packaging and labeling
- Shrinking order sizes and unit sizes
- Order tracking requirements
- Instantaneous information

4.0 THE SUPPLY OF ORDER PICKING

For all the demands of order picking, there are supply items that are affected as demands change. Included in the order picking supply categories are the operating costs within the warehouse to pick, replenish and monitor inventory; the shipping costs to both package and transport products to customers; the error correction costs associated with backorders; incorrect order shipments; inventory errors affecting order picking and the capital costs associated with space, equipment and systems.

■ **Operating costs:** The operating costs associated with order picking can be broken into three main categories:

1. Labor
2. Space and equipment
3. Maintenance

A significant portion of the operating costs is the cost of labor to store product, replenish pick areas, pick product and record inventory moves. The flexibility and volatility of labor in reaction to changes in the order picking environment makes it a key economic indicator of costs and productivity. Labor is directly affected by influences such as:

- The ability to locate product
- Accessibility of product (multiple material handling)
- Travel distances required to retrieve products
- Packaging and re-packaging requirements
- Verification steps
- Data recording and updating mechanisms
- Material handling equipment
- Pick line layout
- Unit load size

In addition to labor, the cost of the storage space and equipment contributes the second largest share. The primary cost of space includes any lease costs and/or depreciation on a facility and equipment, property taxes, product and facility insurance and annual utility costs to operate the facility and equipment. These costs are unavoidable in warehousing and order picking environments.

Maintenance costs make up the third component of operating costs. Maintaining a facility, material handling equipment, and all associated systems requires significant effort and resources. The cost maintenance climbs with the complexity of the equipment used,

the amount of space utilized and the level of technology of all system advances. In regard to maintenance, bigger, better and faster translates into higher costs.

■ **Shipping costs:** The shipping costs associated with distribution include all costs from the shipping carton to the transportation charges for delivery. Similar to operating costs, there are three primary areas contributing to shipping costs:

1. Labor
2. Packaging materials
3. Freight charges

Labor consists of the personnel costs associated with packaging small parts, preparing and attaching shipping labels and all associated paperwork, verification, carrier scheduling, loading and the filing of freight records. Many of the labor functions associated with shipping may be automated and eliminated, but the loading of non-standard unit loads remain the exclusive responsibility of a human worker. The amount of labor required to package materials in preparation for shipping is directly affected by the product and the quantity being packaged by influences such as:

- Product fragility
- Product environmental stability
- Product value
- Urgency of need
- Unit size
- Product mix
- Customer customization requirements

Influences such as these dictate not only the amount of labor required, but the type of containers used for shipment. Specialty shipping cartons are generally associated with individual piece pick orders and mixed broken case orders. However, with the continued growth of the export industry the use of specialty pallet containers continues to increase.

■ **Error correction costs:** Perhaps the most controllable and most ignored costs involved with order picking revolve around inventory problems. Inventory problems come in two distinct forms: amount and location. Either we do not know how much product really exists in the warehouse, or we lack accurate inventory location information. Poor inventory data creates backorders, picking errors and reduces picking labor productivity.

Backorders are created when inventory goes out of stock or is lost in space. The costs associated with backorders include:

- Labor to pick, pack and process the back-ordered item
- Packaging and shipping materials
- Freight charges
- Loss of customer confidence

These often equal or exceed the costs associated with picking and shipping the original order.

Picking errors incur the same costs as backorders, but they additionally decrease the overall inventory accuracy, thereby increasing the possibility for more errors. Picking errors generally turn into inventory losses, whether they are overages that never get

returned, shortages or incorrect product shipments which somehow never manage to return in reusable form, or do not return at all.

Finally, the inability to locate inventory during the order picking process results in less-than-efficient labor utilization. In most operations, the time to travel to a pick location and the time to locate a product consumes the majority of an order picker's time. The more manual the order picking process and the greater the disorganization of a pick area is directly proportional to the inefficiency of labor. The application of proper control procedures, inventory tracking mechanisms and quality picking equipment can quickly improve labor productivity.

■ **Capital costs:** When considering improvements to the order picking operation, one must carefully balance the cost of the improvements against the dollars available to implement those improvements. The three most common capital costs associated with order picking are:

1. Quality space
2. Material handling and storage equipment
3. Control systems

The maximum efficiency of any pick area is first defined by the quality of space provided for the operations. Regardless of whether space is old or new, or low bay vs. high bay, the space must protect the product stored rather than add to damage problems. The space must also be flexible for growth and multiple unit size picking operations, as

well as affordable in relation to the products being stored. The economics of product value vs. space quality must be considered carefully. Spending several million dollars to build a high bay warehouse to store recycled newspapers makes absolutely no sense when an old cotton warehouse is available in the area for less than a tenth of the cost. However, if the products being stored are computers or pharmaceuticals, the reverse is true.

After space, and directly resulting from the type of space utilized, the material handling and storage equipment form the second most significant portion of capital costs. Material handling equipment costs for order picking can consist of any combination of the following equipment:

1. Pallet jacks, dollies and carts
2. Fork trucks (all types)
3. Order picker vehicles (all types)
4. Automated guided vehicles (AGVs)
5. Conveyors (all types)
6. Cranes or monorails
7. Scissor lift tables
8. Shelves and bins
9. Carousels (vertical or horizontal)
10. Pick racks (carton or pallet flow)
11. AS/RSs
12. Secondary packaging and labeling equipment
13. RF or batch scanners
14. Scales and other measuring devices
15. Case erectors/sealers
16. Pallet or tote dispensers
17. Specialty equipment
18. Others

Storage Equipment/ Methodology	Space Type	Picking Unit Size	Material Handling Option #1	Material Handling Option #2	Material Handling Option #3
Bulk Storage	Low Bay	Pallet	Std. Fork Trucks	Clamp Truck	Pallet Jack
Selective Pallet Rack	Low Bay	Pallet	All Fork Trucks	Walkie-Stacker	AGV
Bulk Storage From Floor	Low Bay	Case	Pallet Jack	Most Fork Trucks	Pick to Conveyor
Selective Pallet Rack- All Level Picking	High Bay	Case	Order Picker Trucks	All Fork Trucks (Lower to Floor)	Mezzanine Pick- to-Belt System
Double Deep Rack	High Bay	Pallet	Reach Truck	Pushback Rack (All Fork Trucks)	
Drive-In/Drive- Through Rack	High Bay	Pallet	Narrow Pallet Truck	Standard Fork, Wide Slave Pallets	
Pallet Flow Rack	High Bay	Case	Pick Module to Conveyor	Floor Level Picks to Pallet Only	Most Standard Fork Trucks
Case Flow Rack	Low Bay	Case	Manual to Conveyor	Robotic Extractor	Auto Release to Conveyor
AS/RS	High Bay	Pallet	AS/RS Shuttle		

Table 1: Storage and Equipment Correlation

The simplest order picking operation may require equipment costing only several thousand dollars, while a fully automated material handling system may exceed several million dollars in equipment. The choice of equipment will be influenced by the type of space, product characteristics, product value and labor requirements to pick the product.

The type of storage equipment and the storage methodology utilized directly influences the choice of material handling equipment within the warehouse and order picking areas as demonstrated in Table 1.

Table 1 is not a complete list of the possible combinations of storage and material handling equipment, but it represents some of the most common choices used today.

Finally, the last capital cost item needed to efficiently run a warehouse is the control system. Control systems can be divided into three categories:

1. Verbal
2. Paper-based
3. Paperless

The verbal system in its simplicity works fairly well in low-volume environments. The basic premise for the system is calling out to someone else to pick the product. For a good mental image, think of a waitress calling an order back to a short-order cook, and then remember how many times your order was delivered incorrectly.

The standard warehouse control system today is paper-based. In a paper-based system, either a computer or a human compile orders and create paper pick tickets for order pickers to pull orders. The order pickers then must read the item to be pulled and hope the inventory is located in the slot the computer identified for them. This works as long as the location is the most convenient or if inventory is reliable and accurate. In a well-maintained environment with experienced order pickers, a paper-based system can function extremely effectively. However, there are multiple opportunities for data entry and order pick errors which raise the annual costs of the order picking operation. The benefit of paper-based systems is the relatively low cost to purchase and implement them.

In principle, the paperless warehouse simply implies that all product movement is tracked electronically rather than through the old-fashioned paper trail. This eliminates the traditional errors associated with product recognition, location confirmation, data entry and picking accuracy, while increasing tracking capabilities and reducing overall labor requirements and training. The paper pick lists are replaced with electronics such as RF or batch terminals, pick-to-light systems, warehouse management systems and automated picking equipment such as AS/RSSs, A-frames and robotic extractors. These systems and equipment all carry hefty price tags but payback quickly by significantly reducing errors and overall operating costs.

Until now, the discussion has focused on the influences and factors involved with order picking. The “demand” and “supply” of

order picking appear straightforward in defining. Still, how can a balance between the supply and demand be reached to form the best order picking for any operation?

5.0 CREATING THE PERFECT ORDER PICKING OPERATION

In order to form the perfect picking environment for any operation, there must be a balance between the contributing influences. To do this, we must first take a two-dimensional look at the trade-offs that must be considered when planning or improving an order picking operation. In order to do that, let’s recap the influences:

Demand

- Right product/
no errors
- Delivered now
- Custom packaging
and labeling
- Smaller quantities
- Order tracking
- Full warehousing
services/supply
chain management
- No up-charges or
reduced costs

Supply

- Labor
- Information
- Space
- Equipment
- Time
- Technology

How do we meet the demands of our customers and stay profitable in business? Let’s start with meeting the customer demands.

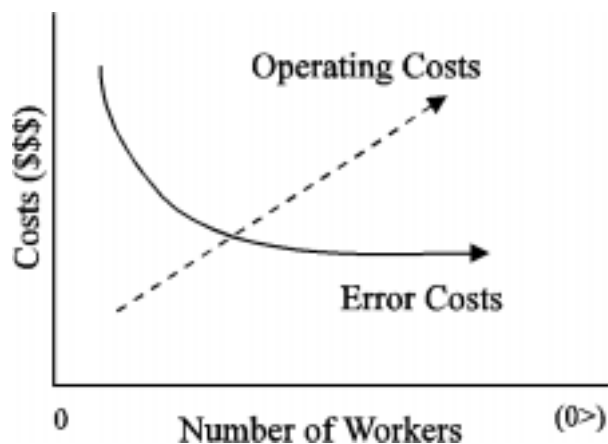


Figure 2

■ **Right product/no errors:** There are two approaches to achieve high-order fill accuracy: verify, verify, verify or automatic identification technology. The first approach involves adding layers of labor to check on other layers of labor. This rapidly increases the operating costs of any picking operation as non-value added personnel cut into profits. Theoretically, there exists a break-even point where the labor to obtain the accuracy exceeds the error cost reductions (see Figure 2).

The second approach involves investment into technology, which electronically verifies and updates all records. Generally, there is a point at which the cost of technology exceeds the savings obtained, as shown in Figure 3. It is near this crossing point that the level of capital investment in technology should be steered.

■ **Delivered now:** In addition to receiving the right product, customers want to receive the product with minimal lead times so that they may control and reduce their own inventories. In order to shorten order fill times,

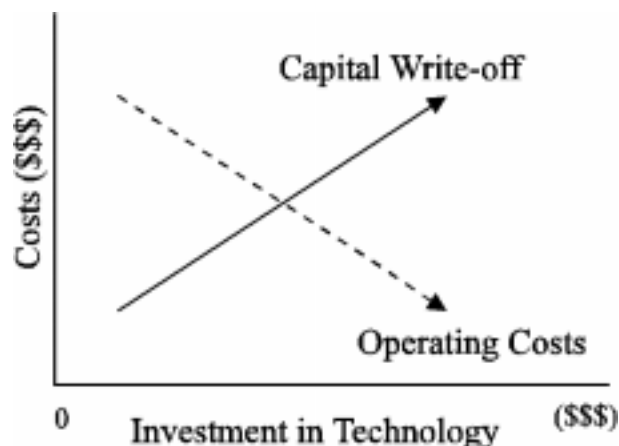


Figure 3

inventory must be accurate, easily located and assessable. In addition, the appropriate amount of labor and technology must be utilized to handle the throughput volumes. To make meeting the throughput demands more difficult, remember that customers are placing smaller orders more frequently; therefore, this trend will continue rather than grow as technology improves.

So, what are the factors in delivering the right product as quickly as possible? As we have discussed, accurate information is critical. This type of information can only be obtained by utilizing electronic information systems and automatic identification technologies. The relationship of information system technology to throughput capacity is shown in Figure 4. This technology may be as simple as a bar-coded locator system or as complex as an integrated business, order picking and warehouse management system.

The second key piece to effective order picking is having enough space to make item picking easy. Any double handling of material should be eliminated. Figure 5 illustrates

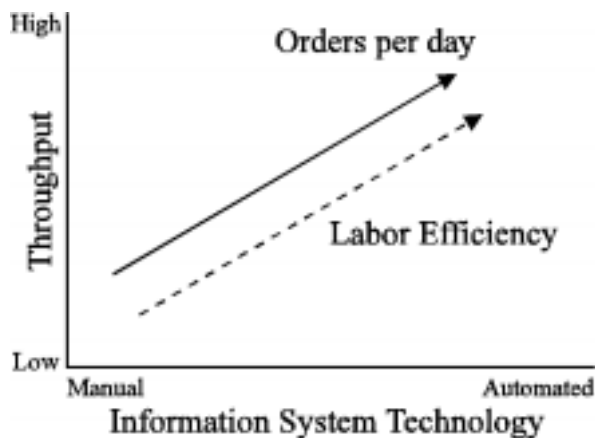


Figure 4

the effect item accessibility has on order picking efficiency.

■ **Custom packaging and labeling:**

In addition to expecting the right product delivered quickly, requests by customers to either apply a store label or to create a specialty mix of products in customer packaging configurations without adding any lead time are becoming common place. This is especially true in the retail distribution arena. As in all order picking operations, information is critical to the success of any secondary packaging operation.

In dealing with custom packaging and labeling, the secondary operations increase the amount of items to be picked. Instead of just picking product, now both product and labels and/or packaging materials must be correctly picked to complete orders. In addition, secondary packaging operations require both dedicated space and cyclical labor to successfully operate over time. However, if secondary operations are implemented correctly, they have the potential to save space and labor.

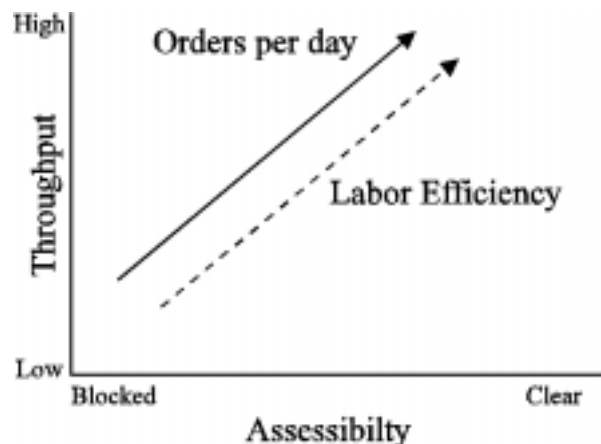


Figure 5

These savings come through a reduction in the number of unique finished product codes stored in the warehouse. This is accomplished by completing the packaging process during the order picking operation. In this way, generic bulk product may be stored in higher density storage areas and safety stock may be reduced due to a decrease in demand variation with a single SKU leveling out multiple product codes' individual sales. Hence, by being able to store less more densely, a reduction in the amount of space required to store material occurs. Figure 6 illustrates how SKU reductions affect storage space requirements vs. how they affect packaging space requirements. Less space translates directly into a reduction in the overall travel distances labor must travel to pick product. Figure 7 shows the relationship of total square footage of space to the labor required to pick items from random vs. fixed storage locations. In Figure 7, the difference between random and dedicated storage is the result of being able to lay out a picking area based upon a standard ABC analysis to minimize picker travel.

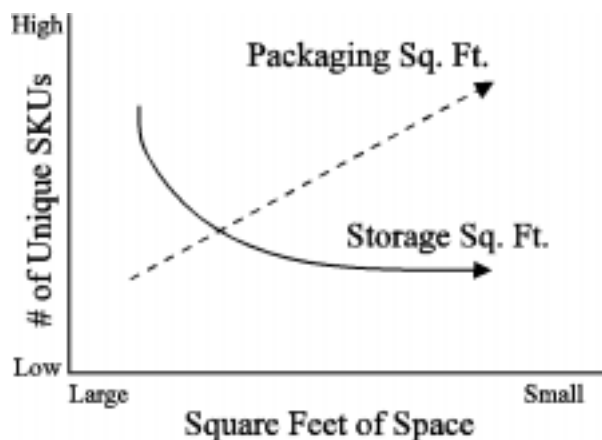


Figure 6

When dealing with custom packaging and labeling, the reality is that at some point there will be no economic return on either space or labor by continuing to custom package every SKU in the warehouse. This point varies for every operation by the customer requests, the product size and characteristics, the sales volume and the level of packaging sophistication within the secondary packaging areas.

■ **Smaller quantities:** In the 1970s, companies moved into the highly automated pallet storage and retrieval systems in order to improve productivity. Today, those monoliths of technology are being utilized for backup storage, as customer order sizes have gone from truckload to less-than-truckload, to case and mixed case quantities. Smaller order sizes translate directly into more customer orders, ordered more frequently, which directly increases the amount of labor required to pick the same quantity of items over time in any non-automated pick system (Figure 8).

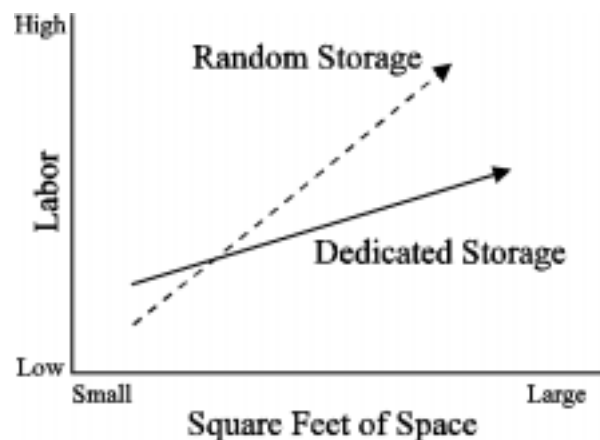


Figure 7

Smaller orders, by their nature, increase total shipping costs and the amount of time required pick orders. There is very little that can be done with shipping costs outside of contract negotiations and rate shopping for small package and LTL deliveries. However, the time required to pick orders can be greatly reduced by lowering the amount of distance between products, by automating the delivery of product to the dock and by improving the information available to the order pickers. All of the above require capital investment. Figure 9 shows the relationship of order quantity to total labor.

In order to reduce the amount of travel between products, a case or broken case pick line must be established. For broken case items, the use of carton flow racks, carousels and/or pick shelving should be utilized and incorporated with some type of picking system, such as pick-to-light, pick-to-belt or batch pick-to-tote (carton). Several options for automatically delivering product to the docks include: fully automated case sortation

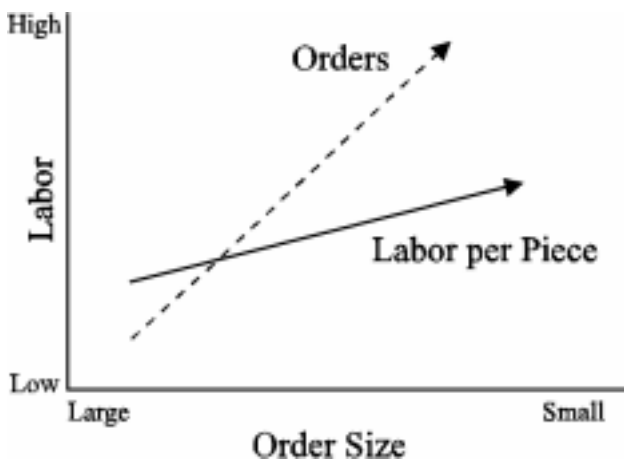


Figure 8

systems, straight line conveyerization of totes or cartons to packing and manifest areas adjacent to the dock, and pallet conveyors for movement of larger orders or consolidated orders. In order to improve information, the implementation of automatic identification technology (bar-codes with readers) should be combined with at least an inventory/locator system. The trade-offs required to handle smaller order quantities, especially broken case orders, are labor reductions for technology investments and labor reduction for space utilized for broken case equipment and pick lines.

■ **Order tracking:** Today, customers want to know exactly where their orders are and when they will arrive at their docks. In order to accomplish this customer service function thoroughly, the location and status of orders throughout the distribution process must be electronically tracked and updated in a real-time environment. The only path to follow to accomplish this goal, outside of hand-entry, is to invest in technology.



Figure 9

This technology must include some type of automatic identification such as standard bar-codes, two-dimensional bar-codes and/or RF/ID tags and be tracked throughout the process. The more labor you throw at order tracking, the less technology needed, and the more technology you invest in for order tracking, the lower the labor for tracking orders and for correcting errors.

■ **Full warehousing services/supply chain management:** There are customers who have decided to forsake warehousing and distribution and focus on what they do best, which is manufacturing or sales. In order to do this, they must either contract with a reputable third party distributor, which may be more expensive, or force their suppliers to shoulder the burden. In order to handle this sudden change in the distribution center operation, which results in both smaller order quantities and increased demands for order tracking and information, the only option is to invest in technology or labor. These have been discussed already. However, the second

part of supply chain management, the space to handle the extra inventory, is in need of clarification.

Extra space creates additional labor and operating cost, as well as capital dollars for equipment and the space itself. Yet, if our customers are willing to share their sales or production planning information, it is possible to control the increase in inventory growth. This sharing of information must come through such systems and programs as Distribution Resource Planning (DRP) systems, Point-of-Sales (POS) information and/or Vendor Managed Inventory (VMI) programs. All of these systems and programs require technology improvements and investment, but caution must be taken to implement these programs with all customers in mind rather than designing a system for a single customer. This can and will create a never-ending web of technological complexity.

■ **No up-charges or reduced costs:**

Finally, customers want all of the above at no extra charge. This may sound unreasonable at first, but with the proper planning and design of an order picking operation and a careful balancing of the scales between investment and operating costs, this can be accomplished. All of the previously discussed two-dimensional trade-offs become a complex equation that requires careful analysis of both the present and future operating environment and the ability to move to the present and future age of high-tech information. If not, the ability to deliver the right product at the right time

or perhaps more correctly, quickly and in good condition, will never be realized.

6.0 CONCLUSION

The order picking requirements for every business are unique and ever-changing. The movement of goods from Point A to Point B is not what it was 30 years ago, when a pallet went into a big building and the same pallet came out the other side. (OK, it was never that easy!) Nothing comes out the other side in the same configuration as it goes in, especially when it travels through today's modern distribution centers.

What this means is that the planning and investment in those facilities will impact the profitability and success of the entire company to a much greater degree now and in the future. The proper selection of equipment, the appropriate investment in technology and the careful layout of a facility are the result of intensive planning and analysis that includes all of the above topics, plus dozens of other comparisons such as:

1. Cross aisles vs. travel time (layout and storage logic)
2. Labor vs. unit size (run a comparison of the time to pick a single case with travel and pick time dock to dock vs. the time to pick individual pieces from a fixed station including the replenishment of multiple cases)
3. Space quality or product value vs. space cost

This is a never-ending process of refinement that starts with a single dedicated plan to build the distribution operation that will catapult us past our competitors. The success of the project will be defined by what we demand of ourselves and what efforts, resources and expertise we supply to the project.

APPENDIX

Background Information

TOMPKINS ASSOCIATES: Supply Chain Excellence

Tompkins Associates is the global leader in Total Supply Chain Solutions for operations consulting, technology implementation, and integration. For nearly three decades, Tompkins has provided expertise in warehousing, logistics, procurement, inventory, manufacturing, organizational excellence, quality, and maintenance.

Tompkins Associates is headquartered in Raleigh, N.C., and has offices throughout the United States and in the UK, continental Europe, Mexico, and Australia. Worldwide, Tompkins helps clients succeed through a combination of focused knowledge of best practices and tailored solutions. Tompkins prepares businesses to harness the energy of continuous change to achieve Supply Chain Excellence.

Tompkins Associates understands your unique needs. Tompkins' supply chain expertise helps clients work seamlessly with their supply chain partners to provide the service they need to satisfy their customers. No other firm has the capability to melt the links in your supply chain-taking you from business as usual to collaboration to velocity.

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