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White Paper

A Holistic Approach to Improving Distribution Operations
Part One

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What Business Goals Can Distribution Operations Help Achieve?

This series of two white papers is intended to provide a roadmap of how to best approach developing distribution operations improvements with the greatest probability for success. In Parts 1 and 2, we will address specific questions, including:

- What business goals can distribution operations help achieve?
- What are the specific areas for improvement and their relationships to each other?
- What are the key steps when developing distribution operations improvements?
- What resources are required?

What Business Goals Can Distribution Operations Help Achieve?

In today's challenging economy, supply chain professionals are looking for ways to optimize assets and investments, and increase the bottom-line profitability of the organization. There are two ways that distribution operations can increase a company's profitability: 1) By increasing revenues (helping sell more product), and/or 2) By decreasing costs (becoming more efficient).

First, effective distribution operations can help increase revenues by **improving customer service**. Better customer service leads to happier clients and a greater probability for sales growth. Many customer service factors are controlled by distribution including:

- Accuracy - Correctly fulfilled orders make clients happy while incorrect ones do just the opposite. This directly affects sales revenue
- Fill-rate - Same as above in terms of a client receiving their order complete or in the same shipment
- On-time delivery - Receiving the order when promised directly affects customer service. The entire order fulfillment process contributes to on-time shipment and delivery
- Order cycle times - Have a direct impact on shipment and delivery times, as do other cycle times, including dock-to-stock and process level cycle times (receiving, put-away, picking, packing, shipping)

Secondly, a distribution operation can increase revenues by **ensuring that demand is fully met.** Although fulfilling orders in itself may not directly increase sales, it ensures revenues are not decreased due to the operation not being able to fully meet demand. For example, we have all heard stories about a company's inability to fulfill orders to meet higher-than-expected demand and the subsequent impact this has on sales revenue and bottom-line profitability. A distribution center's (DC) control over meeting demand centers around storage capacity and throughput capacity. A DC must have storage capacity to hold enough inventory to meet demand, and it must also have ample throughput capacity to ensure orders are shipped and delivered on-time.

Lastly, a distribution operation can provide **competitive differentiation** that increases revenue. Examples of competitive differentiation provided by the DC are an extension of the order entry window and the ability to reduce order cycle times. Extended order entry windows provide customer convenience, which generates goodwill and increased market-share. Another example is expanded value-added services (VAS), such as customization or special labeling. Extensive VAS is a strong competitive differentiator and also leads to increased revenue from the services themselves. Real-time systems can also give you a competitive advantage by permitting greater order visibility (i.e. ASN's, order-tracking, inventory visibility, etc.).

On the cost side of the equation, a distribution operation can help a company **reduce overall costs** by ensuring the most *effective* and *efficient* blended use of processes, people, inventory, facilities and systems. These areas are all highly interdependent. Changing one will result in a change in all of the others. It is important to think in terms of *optimizing* costs for each of these areas, not just minimizing them, to achieve the *lowest overall cost*. A very simple example is that lowering wages may have a negative trade-off in higher employee turnover and decreased customer service, which could result in a higher overall cost. A more complex example is changing a process or system, thus affecting all of the interdependent areas within the DC. Here, the trade-offs can be extensive.

Cost savings typically occur over time, and it is important to calculate and consider the **lifetime cost** of any change or new solution. Lifetime costs include:

- Flexibility - How costly is the solution to change? What is the probability of change? What is the probable magnitude of change?
- Scalability - How costly is the solution to expand or contract? What are the probabilities of expanding or contracting? What is the exit strategy and its overall cost?
- Support - How costly is the solution to maintain? What are the support factors, including internal resources and reliance on others? What risk does this impose?

And not to forget the cost-side of customer service: a well-run operation can save significant money by delivering good customer service. For example, high accuracy and fill-rates reduce returns and the associated non-value-added effort and costs. Also, efficient order cycle times help meet shipping schedules, which can reduce costs. For example, costs can be reduced by fulfilling an entire order in a single shipment vs. sending more expensive split shipments, with their increased shipping, handling and materials costs.

Thus, when determining business goals that can be achieved through distribution operations, it is important to ensure that they are aligned with improving your company's bottom-line profitability. This understanding will provide the basis for the project's business plan, and drive goals for more specific areas of improvement.

Areas for Improvement and Their Interdependencies

A successful distribution operation delivers **best-of-breed** processes, people, inventory, facilities and systems. These are the primary areas of focus when developing solutions for an operations improvement project. Each of these areas are inter-related and dependent on each other for their own success, as well as the overall success of the operation.

Processes

Processes guide the operation, from receiving to shipping and everything in-between. For every function or task, there should be a documented process, which is a specific method or system that people follow to achieve an end result. Without a defined process, it is left to chance that the work will be done effectively or efficiently. Processes must be documented and personnel fully trained to those methods. Each process within an operation affects all others. If one is ineffective or inefficient, then all of the downstream processes and the distribution operation as a whole becomes compromised. The greater the level of process detail developed and trained, the greater the consistency and the results.

Using packing, as an example, highlights how standardizing even a relatively simple process can yield significant results. With a less detailed packing process, personnel may arbitrarily determine carton sizes, dunnage quantities, product positioning, etc. When the packing process has been fully detailed, these areas are well defined, removing a decision-making process from personnel. Greater definition leads to more consistency, less errors and better results. While extra dunnage for a single case isn't expensive, when shipping millions of cases a year, even a small percentage of errors can cost thousands of dollars. Continuing with this example, not adding enough dunnage or poor product positioning can result in costly product damage, in addition to hurting customer service, and increasing requirements for other processes, such as returns. So, even simple processes, when fully defined and trained, have the potential to greatly impact operations.

People

Personnel is an often overlooked – yet critical – component of a successful operation. People execute processes to accomplish tasks that produce an end result. An operation can have excellent processes; however will suffer if associates do not follow them. Some of the primary reasons people stray from following developed processes include:

1. A lack of understanding the process, which can be attributed to a lack of training or capability
2. Resistance to change
3. Lack of motivation, potentially indicating a lack of supervision, measurements or a process for motivating people to do the right thing

A company can have great processes, but if the people lack training, capability and motivation, it will be extremely difficult to run a successful operation. Conversely, a company can have very capable and motivated people; however, without good processes these strengths will not be fully realized. "People costs" are a very significant portion of an operation's total overhead, and are a major consideration for any distribution improvement project. Changes in every other area of the operation, whether it is systems, facilities, processes or inventory, affect the people component of the operation.

Inventory

Inventory levels are often dictated to the distribution operation by the business side of the house (i.e. sales, merchandising, etc.). However, operations must provide input to any decision regarding the way inventory is handled in a company's supply chain, even outside of the four walls of the DC. Operation's input on inventory decisions include:

- Where inventory is to be located within the supply chain. For example, in a multi-site network, should inventory be the same mix of products in each location?
- The amount of inventory to be stored. Though not always directly controlled by the distribution operation, days on hand inventory and inventory turns directly affect all other aspects of the operation. Distribution has an obligation to communicate this information to the other parts of the business taking part in these decisions.
- Where inventory is to be stored in the DC itself. For example, too little inventory in a forward location increases replenishment labor and requires more from the systems side (i.e. more materials movement). Alternatively, too much inventory in a forward location can decrease productivity (through increased pick-paths) and require greater systems (i.e. increased forward material handling equipment).
- How inventory should be segregated. Should a multi-channel retailer combine or separate inventories, based on the end customer? Should products be stored by family or other groupings?

Beyond the points listed above, distribution has the responsibility of ensuring inventory accuracy on a continuous basis, which, if done incorrectly has a direct negative effect on productivity, costs and customer service.

Inventory considerations will impact processes, facilities and systems within an operation, thus directly impacting the people that drive and support these areas. Inventory must be considered in any alternatives review and solutions development for a successful distribution operations improvement project.

Facility

The distribution center and its equipment represents a significant investment for any company. An accurately sized facility provides the right amount of space and takes into consideration a variety of factors, including growth, seasonality and the cost of space. An accurately designed facility promotes good processes, materials and personnel flow, as well as cube utilization.

All of the above mentioned factors – processes, people and inventory - impact the facility. First, the amount of inventory will dictate the physical capacity of the facility. An increase in inventory turns, however, can decrease facility size requirements, as there is a strong correlation between the two. Facilities and processes are also correlated, particularly the impact on facility layout and the flow of materials and personnel. The facility and its systems are interdependent also. For example, the physical layout, including aisle width, ceiling height, and supporting structures affects options for materials handling equipment. Because of the strong correlation between the facility and all other areas of the operation, each time an alternative is being reviewed for change, the facility must be a part of the consideration.

Systems

Systems can make processes and people more efficient and effective. They can be simple or sophisticated, and everything in-between, and are typically proportionate to the size and scale of the operation. Additionally, they must support company objectives of consistent customer service, increased efficiency and cost minimization. Large-scale systems with complex product handling and/or customer requirements typically require significant investments of time and money. There are many inter-related systems within a distribution operation, including:

- Material Handling Systems (MHS)
- Warehouse Control System (WCS)
- Warehouse Management System (WMS)
- Host Business System (i.e. ERP)
- Order Management System (OMS)
- Transportation Management System (TMS)
- Yard Management System (YMS)

Systems are not only closely related to the processes and people within the distribution operation, but also with other systems. Typically a functional deficiency in one system will affect the success of another, causing a domino-effect. It is important to note that there may be significant integration challenges when changing or upgrading any system – do not assume anything.

System solutions, therefore, must be developed in conjunction with the processes, people and other systems. Designing one without considering the others introduces significant risk.

Summary

As demonstrated, each area of improvement must be considered, in depth, when designing a holistic solution to improve distribution operations. It's an orchestration of all of these areas that provides the optimal result. In our next segment, we will review how to best approach solution development and how to ensure the right resources are devoted to the project.

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Our business-goal focused approach balances systems, processes, people and assets to optimize your supply chain and help you improve competitive advantages, achieve cost savings and improve service levels to your clients.

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