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The Challenge of Multi-Site Warehouse and Order Management

Meeting Customer Requirements While Lowering Logistics Costs

April 2007

— Underwritten, in Part, by —





Executive Summary

As supply chains become increasingly more global in nature the ability to effectively manage a network of distribution centers is becoming a required core competency. Unfortunately, a surprisingly high number of companies that currently practice multi-site distribution are experiencing real challenges in this area impacting profitability. In a recent survey of 146 multi-site distributors, almost two thirds of companies report that their operations are moving in the **WRONG** direction—costs have risen, and customer service levels have declined.

Best-in-Class Performance

However, a small group of companies have mastered the art of managing a network of warehouses. These companies follow strategies which allow them to provide superior levels of *customer service* while at the same time *containing costs*. On average, Best-in-Class companies have:

- **99%** or more on-time and complete orders
- **Fewer than 1%** of orders contain a line that is back ordered
- **Lower** inventory carrying costs over two years
- **Reduced** inventory write-offs for spoilage or obsolescence over two years

Competitive Maturity Assessment

The firms enjoying Best-in-Class performance shared several common characteristics with respect to their multi-site order fulfillment capabilities, such as:

- Companies that have reduced their order fulfillment costs year-over-year are 82% more likely to have sales order splitting capabilities.
- Companies that have reduced their inventory carrying costs year-over-year are almost **TWICE** as likely to practice order distribution by inventory level.
- Companies that have 99% or more complete shipments are 54% more likely practice Vendor Order Splitting.

Required Actions

To achieve Best-in-Class performance, multi-site distributors must:

- Leverage the entire network to fill orders, and move away from dedicated use facilities, resulting in greater agility and improve levels of customer service
- Rather than “rip and replace” disparate WMS systems, use a Multi-Site Inventory Visibility platform to manage globally
- Utilize warehouse and order management applications to enable Sales Order Splitting

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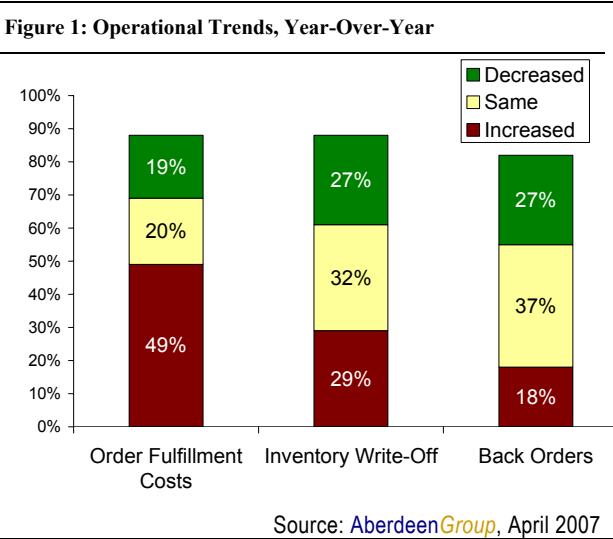
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Chapter One: Benchmarking the Best-in-Class

Fast Facts

- Two-thirds of companies report that their operations are moving in the WRONG direction—costs have risen and customer service levels have declined.
- Only one out of every three multi-site distributors can improve customer service while reducing costs.
- While most companies are still struggling just to meet service demands like customers needing their orders faster, leading companies take a broader approach that addresses cost containment as well as customer service.

As supply chains become increasingly global, managing a network of distribution centers is becoming a fact of life for more companies. However, a high number of companies that currently practice multi-site distribution are experiencing real challenges to profitability. As Figure 1 indicates, however, almost two-thirds of companies report that their operations are moving in the WRONG direction—costs have risen, and customer service levels have declined.



Competitive Framework Key

The Aberdeen Competitive Framework defines enterprises as falling into one of the three following levels of practices and performance:

Best-in-Class (20%) —practices that are the best currently being employed and significantly superior to the industry norm

Industry norm (50%) —practices that represent the average or norm

Laggards (30%) —practices that are significantly behind the average of the industry

Companies engaged in multi-site order fulfillment experience a number of challenges that single-site distributors do not. For example, planning must take place to determine which items will be stocked in which warehouses. Also, decisions must be made as to how to best use the network of distribution centers to fill individual orders.

Maturity Class Framework

Success in multi-site distribution can be measured against certain key metrics that serve as a barometer for performance in the above areas. According the The Aberdeen Report—State of the Market 2007, companies’ top goal in 2007 is growing revenue.



Although logistics costs must often rise to support this growth, Best-in-Class companies realize that it is critical that logistics costs not increase at a faster rate than sales growth.

Aberdeen used seven key performance criteria to distinguish Best-in-Class companies from Industry Average and Laggard organizations. These key performance indicators (KPIs) are designed to get at the heart of the challenges:

- Raising customer service levels
- Containing costs

Table 1 summarizes the findings and defines “Best-in-Class performance” for this study. It is worth noting that few, if any companies meet all seven performance criteria. Class ranking is based upon a weighted scoring that factors in all KPI’s.

Table 1: Companies With Top Performance Earn “Best-in-Class” Status:

Definition of Maturity Class	Mean Customer Service Performance	Mean Cost Containment Performance
Best-in-Class: Top 20% of aggregate performance scorers	<ul style="list-style-type: none"> • 99%+ orders ship on-time • 99%+ orders ship complete • <1% of orders contain an item that is back-ordered • Decrease in back-orders year-over-year 	<ul style="list-style-type: none"> • Decrease in inventory write-offs year-over-year • Decrease in inventory carrying costs year-over-year • Decrease in order fulfillment costs year-over-year
Industry Average: Middle 50% of aggregate performance scorers	<ul style="list-style-type: none"> • 90-98% of orders ship on-time • 90-98% of orders ship complete • 1-4% of orders contain an item that is back-ordered • No-change in back-orders year-over-year 	<ul style="list-style-type: none"> • No change in inventory write-offs year-over-year • No change in inventory carrying costs year-over-year • No change in order fulfillment costs year-over-year
Laggard: Bottom 30% of aggregate performance scorers	<ul style="list-style-type: none"> • 89% or less orders ship on-time • 89% or less orders ship complete • 5% or more orders contain an item that is back-ordered • Increase in back-orders year-over-year 	<ul style="list-style-type: none"> • Increase in inventory write-offs year-over-year • Increase in inventory carrying costs year-over-year • Increase in order fulfillment costs year-over-year

Source: AberdeenGroup, March 2007

Best-in-Class PACE Model

Best-in-Class multi-site order fulfillment contributes to all of the key performance areas cited above, each of which has a direct impact on the enterprise’s goal to grow revenue while containing costs. Leveraging a vast network of distribution centers to achieve that goal requires a combination of strategic actions, organizational capabilities and enabling technology (see Table 2).

“If we could make smarter decisions about which facilities to fill orders from, we could do a much better job of meeting the customer’s needs while practicing good inventory policy.”

- Director of Sales, Metal Products Manufacturer (11 distribution centers)

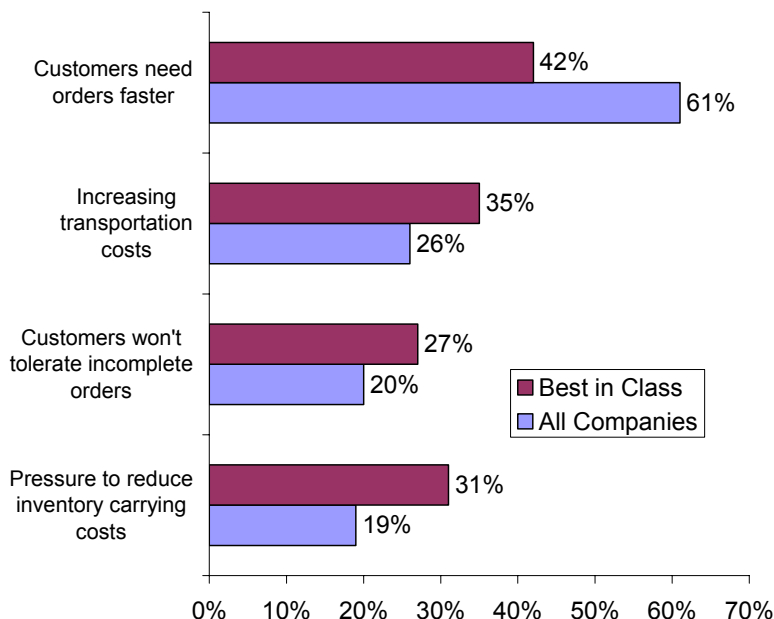
Table 2: Best-in-Class PACE Framework

Pressures	Actions	Capabilities	Enablers
<ul style="list-style-type: none"> • Customers need their orders faster. • Costs are increasing 	<ul style="list-style-type: none"> • Increase Visibility • Improve Execution to manage fulfillment AFTER receipt of an order. 	<ul style="list-style-type: none"> • Complete visibility of all inventory and orders in all facilities on one application. • Split sales orders by line item and fill them from multiple facilities when necessary • Distribute orders based on lead time, inventory levels, and inventory age when necessary • Rapidly transfer inventory from one facility to another on a single software application. 	<ul style="list-style-type: none"> • Multi-Site Inventory Visibility Software (includes dashboards, event management, etc.) • Distributed Order Management Software (DOM) • Multi-Site Warehouse Management Software (WMS)

Source: AberdeenGroup, March 2007

As Figure 2 shows, Best-in-Class companies are focused on a somewhat different set of market pressures than are companies in general. Most companies are still struggling just to meet service demands like customers needing their orders faster. Top performing companies understand that this alone will not lead to profitability:

Figure 2: Top Pressures Faced in Multi-Site Fulfillment

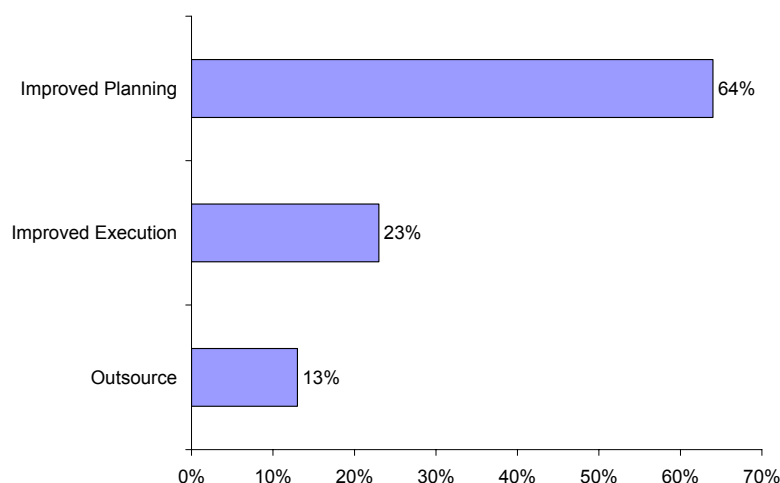


Source: AberdeenGroup, April 2007



Leading companies take a broader approach that addresses cost containment as well as customer service. Best-in-Class companies are far more likely to be concerned with reducing inventory carrying costs and transportation costs, as a part of a holistic approach to multi-site fulfillment.

Figure 3: Differing Strategic Actions



Source: AberdeenGroup, January 2007

Companies are more than twice as likely to address these pressures through improved planning, rather than execution capabilities. **Sixty-four percent (64%)** list this as their primary strategy. (See Appendix B for references to other Aberdeen reports on supply chain planning).

While Supply Chain Planning is a widely accepted means of addressing these pressures, a growing number of companies are focusing on improved execution. Multi-Site execution involves making a series of decisions at the moment an order is received regarding how the network of warehouses will be used to fill those orders.

Aberdeen Insights – The Cost of Manual Processes

Companies that have not automated their multi-site execution are forced to manage their DC's through general rules and labor-intensive exceptions. For instance, a company may have a rule that all orders for the Midwest region are shipped from the Chicago DC. If that DC is out of stock of a certain item, it will be back-ordered, and the customer must wait to receive it. Or, if the customer is important enough, a manager may decide that the entire order will be routed to another warehouse where there is stock, even though freight costs would have been lower if the order had been split and shipped from two different facilities. In the first instance, customer service suffers; in the second, logistics costs are excessive. If the company could easily evaluate all of the impacts of all of the fulfillment options, better decisions could be made.



In another example, a company uses an overstock warehouse to replenish the primary DC. Without a common Warehouse Management System (WMS) managing both sites, managers must assess inventory levels on a regular basis and then manually create work orders to pick goods from the overstock warehouse. There is poor visibility in the overstock warehouse as to what customer orders must be filled, and poor visibility in the primary DC of what inventory exists in the overstock warehouse. Worst-case,, orders are refused or back-orders are created for product that actually exists in an overstock facility but is not visible in the WMS in real-time. Best-case, the result is labor intense, day-to-day management of the replenishment process.



Chapter Two: Benchmarking Requirements for Success

Fast Facts

- Companies that have reduced their order fulfillment costs year-over-year are 82% more likely to have sales order splitting capabilities.
- Companies that have reduced their inventory carrying costs year-over-year are almost TWICE as likely to practice order distribution by inventory level.
- Companies that have 99% or more complete shipments are 54% more likely practice Vendor Order Splitting.

When it comes to multi-site execution, a new generation of process capabilities has emerged that allows companies to leverage their network of distribution centers as never before. These capabilities do not always neatly align themselves in the same technology tools or software applications. For the purposes of this report, each capability has been analyzed separately, and then grouped with similar functions to create three (3) capability groups:

Capability Group	Key Capabilities	
Distributed Order Management	<ul style="list-style-type: none"> • Sales Order Splitting: Split a sales order into smaller sub-orders to be filled from various DC's • Order Distribution by Inventory Level: Evaluate filling customer orders from DC's that are over-stocked • Order Distribution by Delivery Time: Fill orders from whatever DC the shortest delivery time, while weighing cost considerations. 	<ul style="list-style-type: none"> • Order Distribution by Freight Cost: Fill orders from whatever DC has the lowest freight cost, while weighing customer commitments. • Order Distribution by Aging: Fill orders from whatever DC has the oldest stock
Multi-Site Warehouse Management	<ul style="list-style-type: none"> • Inter-facility Transfers: Transfer stock from one DC to another on a single application • Vendor Order Splitting: Change an inbound purchase order and have it delivered to multiple sites. 	<ul style="list-style-type: none"> • Multi-Site Receipts: Receive against the same purchase order at multiple facilities
Multi-Site Inventory Visibility	<ul style="list-style-type: none"> • Internal Multi-Site Visibility: Have complete visibility of all inventory and orders in all facilities on a single application • 3PL Visibility: Have complete visibility of inventory and orders in 3rd party sites 	<ul style="list-style-type: none"> • Global Performance Measurement: Single system to measure order fulfillment metrics (complete, accurate, on-time) across the entire enterprise.

Source: [AberdeenGroup](#), April 2007



Competitive Maturity Assessment

Survey respondents fell into one of three categories – Laggard, Industry Average, or Best-in-Class — based on their characteristics in five key categories: (1) process capabilities (listed on page 6); (2) organization (corporate focus and collaboration among stakeholders); (3) knowledge (visibility of inventory and work-flow data, both for internal and external distribution centers); (4) technology (the use of commercial software applications which provide functionality for each process group); and (5) performance management (ability of the organization to measure the benefits of technology deployment and use the results to improve key processes further). Survey results show that the firms exhibiting Best-in-Class characteristics excel in each category (Table 3):

Table 3: Competitive Framework

	Laggards	Average	Best-in-Class
Process	Posses Distributed Order Management Capabilities		
	15%	23%	35%
	Posses Multi-Site Visibility Capabilities		
	36%	42%	66%
Organizational Structure	Centralization of Procurement, Order Management, & Inventory Management:		
	57%	63%	75%
Knowledge/ Data Management	Complete visibility of all inventory and orders in all facilities on one application:		
	45%	59%	70%
	Complete visibility of inventory and orders in 3rd party warehouses:		
Technology Usage	35%	25%	62%
	Multi-Site Order Fulfillment technology currently in use:		
Performance Management	<ul style="list-style-type: none"> • 24% use a Multi-Site Inventory Visibility application • 9% use a Distributed Order Management Application • 20% use a Multi-Site WMS application 	<ul style="list-style-type: none"> • 43% use a Multi-Site Inventory Visibility application • 27% use a Distributed Order Management Application • 38% use a Multi-Site WMS application 	<ul style="list-style-type: none"> • 41% use a Multi-Site Inventory Visibility application • 30% use a Distributed Order Management Application • 52% use a Multi-Site WMS application
	Single system to manage order fulfillment metrics (orders are picked on-time, completely, and accurately—see Table 1) across the entire enterprise:		
	• 28%	• 43%	• 67%

Source: AberdeenGroup, March 2007



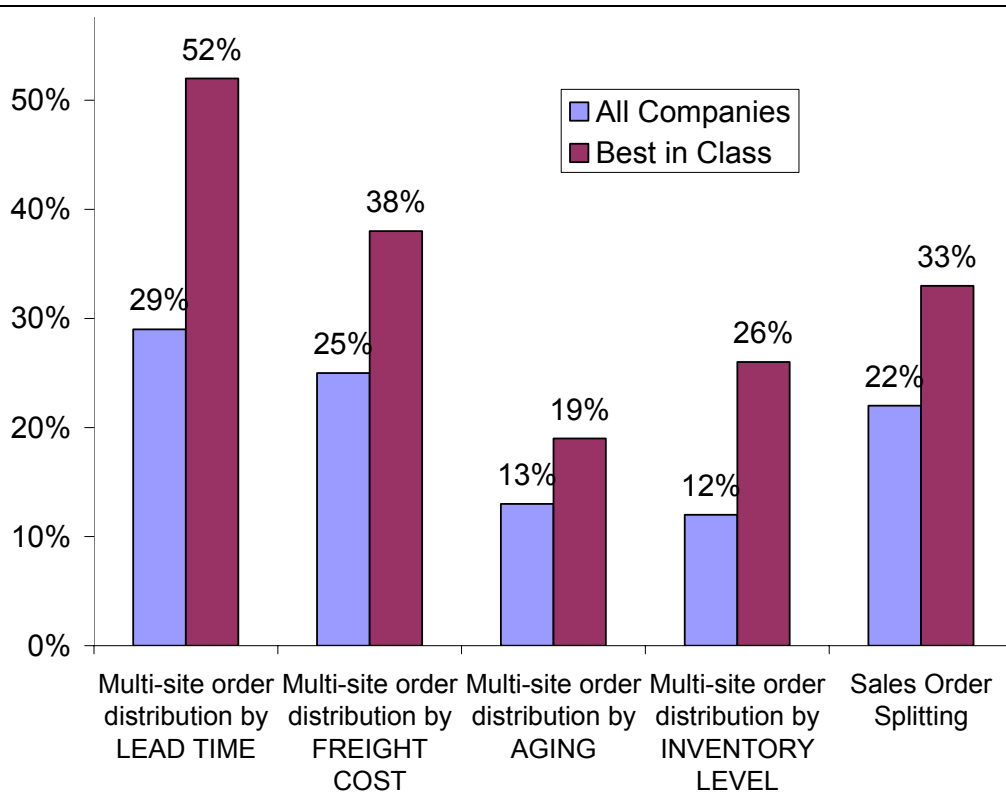
Organizational Capabilities and Technology Enablers

As Table 3 shows, when analyzed in aggregate, each of the three capability groups listed on page 6 contributes in a significant way to improved multi-site order fulfillment. However, some of the individual processes that make up each group have a much higher impact on a specific performance metric. The following three sections take a deeper dive into multi-site order fulfillment.

Distributed Order Management Capabilities

- Overall, Best-in-Class Companies are 56% more likely to have Distributed Order Management capabilities (Figure 4).

Figure 4: Best-in-Class Use of Distributed Order Management Capabilities



Source: AberdeenGroup, April 2007

- Companies that have reduced their inventory carrying costs year over year are 29% more likely to have Distributed Order Management capabilities
- Companies that have reduced their order fulfillment costs year-over-year are 82% more likely to have sales order splitting capabilities.
- Companies that have reduced their inventory carrying costs year-over-year are almost TWICE as likely to practice order distribution by inventory level.
- Companies that have reduced their order fulfillment costs year-over-year are 19% more likely to have Distributed Order Management capabilities.



Case Study: Distributed Order Management and Multi-Channel Commerce

Cabela's Incorporated, headquartered in Sidney, Nebraska, is the world's largest direct marketer and leading specialty retailer of hunting, fishing, camping and related outdoor merchandise. Founded in 1961, Cabela's® has grown to become one of the most well-known outdoor recreation brands in the world through well-established direct business and a growing number of destination retail stores.

When Cabela's embarked on a strategic initiative to move from a catalogue-centric business to a multi-channel retailer, company officials knew it was time to replace the aging legacy order management system. "Our previous allocation and fulfillment systems didn't talk to one another well, which affected customer service," explained Cabela's MIS Director Larry Poppo. "We needed a new order management system that could handle growing demand across every selling channel. Our overall goal was to achieve a global inventory view across all demand and fulfillment channels, but we knew we needed a flexible application that could be configured to meet our unique needs," he said.

Sterling Commerce replaced Cabela's previous order management system with a Distributed Order Management System, which takes demand from every channel and orchestrates fulfillment across their entire supply chain. Now the company has global visibility of orders as well as all inventories across all demand and fulfillment channels. This means the company can manage and monitor orders from multiple channels and coordinate fulfillment across all stocking and fulfillment locations, including stores, warehouses, suppliers and partners. The solution links disparate systems by spanning application boundaries. In addition, the solution enables Cabela's to globally schedule and source orders based upon configurable business rules.

Aberdeen Insights – Spotlight on Sales Order Splitting

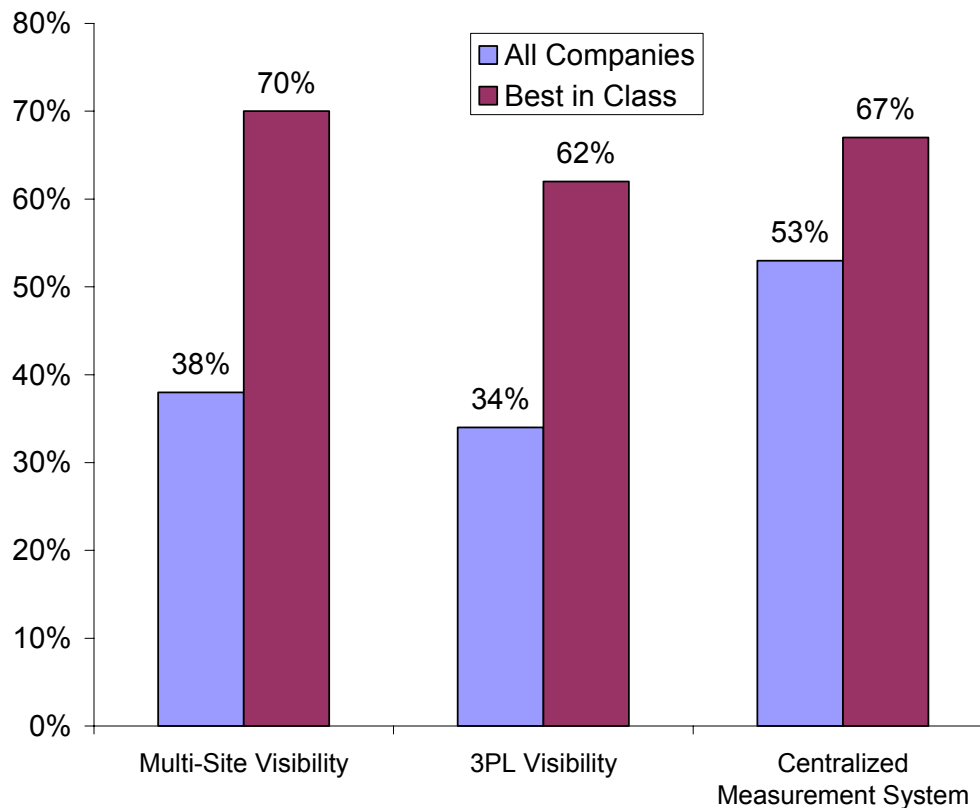
Sales Order Splitting is one of the single biggest predictors of Best-in-Class performance. Best-in-Class companies that scored well in both customer service levels AND reduced operating costs are 50% more likely to have Sales Order Splitting capabilities than companies in general. Companies with this flexibility, can, in effect, perform "line-item" fulfillment, filling each component of an order in the most efficient way possible, factoring in freight cost, lead time, and inventory levels at each DC.



Multi-Site Inventory Visibility

- Overall, Best-in-Class companies are 59% more likely to have Multi-Site Inventory Visibility capabilities.

Figure 5: Best-in-Class Use of Multi-Site Inventory Visibility Capabilities



Source: AberdeenGroup, April 2007

- Companies that reduced their back orders in the last 2 years are 33% more likely to have a centralized measurement system.
- Companies that reduced their inventory carrying costs year-over-year are 31% more likely to have visibility of inventory in 3PL sites.

Aberdeen Insights – Overlay, Don't Rip-and-Replace!

Often when a company grows through acquisition, it ends up with a “patchwork quilt” of processes and applications—multiple Warehouse, Transportation, and Order Management Systems. Each unique process may be very effective in managing a particular distribution center or line of business, but lack of centralized visibility can hamper any enterprise-wide efficiency. Companies often choose to simply live with the problem rather than “ripping out” each application and replacing it with a single system.



The good news is, a group of technologies has emerged that allows centralized visibility without a painful changeover. Best-of-breed visibility systems keep the infrastructure of localized execution systems intact. The visibility application sits on top of the existing Order Management, Transportation Management and Warehouse Management systems. It takes real time data feeds from each system, and provides a global view of the operation on one common dashboard. Companies like Stop-and-Shop have used visibility applications to gain a better view of multiple systems in a single DC. Other companies like Storck Candy have successfully used best-of-breed visibility applications across multiple DC's.

Utilizing a slightly different approach to visibility, BAX, a leading third-party logistics provider, has developed its own home-grown visibility system to manage European distribution for one of the world's largest PC manufacturers. The system provides visibility into vendor-managed-inventory in three different DC's in Spain, Denmark, and the Czech Republic. Each vendor has real time visibility of their inventory levels, and can initiate inter-facility transfers to balance inventory. Furthermore, the PC manufacturer can monitor inventory levels and status of orders to verify BAX's compliance.

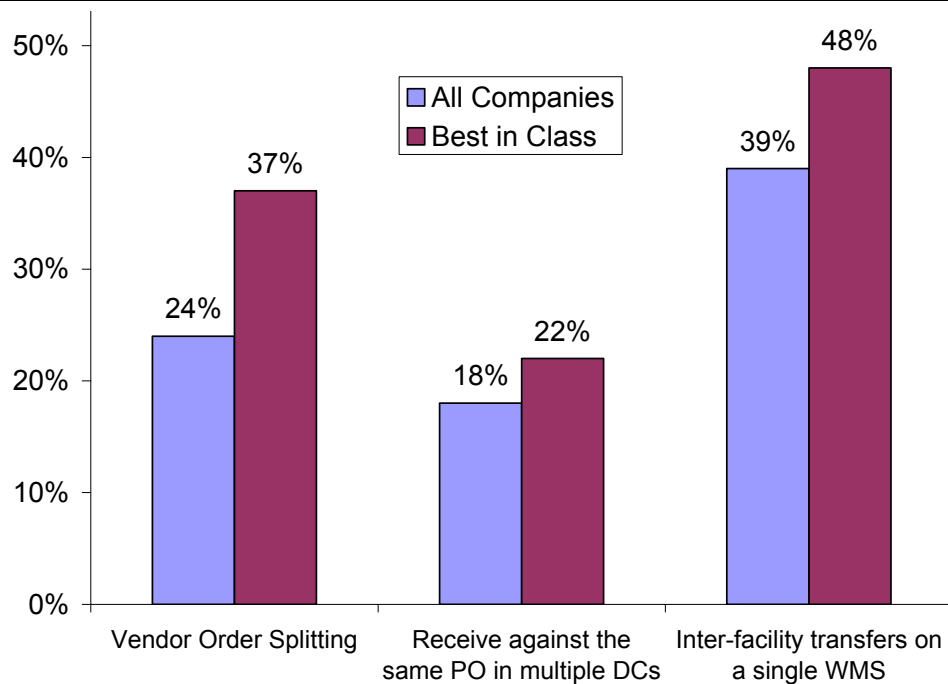
Whether using a best-of-breed or a homegrown application, compared to a wholesale system replacement, Multi-Site Inventory Visibility is a comparatively painless way of improving enterprise-wide metrics while keeping the basic software infrastructure intact.



Multi-Site Warehouse Management

- Overall, Best-in-Class companies are 32% more likely to have multi-site warehouse management capabilities.

Figure 6: Best-in-Class Use of Multi-Site WMS



Source: Aberdeen Group, April 2007

- Overall, companies that have reduced their inventory write-offs due to obsolescence and spoilage year-over-year are 32% more likely to have multi-site warehouse management capabilities
- Companies that have 99% or more complete shipments are 54% more likely practice Vendor Order Splitting. Order fulfillment starts with having the right inventory in the right DC on time.
- Companies that have reduced their percentage of back-orders year-over-year are 16% more likely to have multi-site warehouse management capabilities
- Companies that have 99% or more on-time shipments are 15% more likely to practice inter-facility transfers on a single software application.

Case Study: Subaru Finds Success by Managing the Last 7%

Subaru's North American part's distribution operation consists of six distribution centers that stock a total of 50,000 different SKU's, and sell to nearly 600 dealers. Some SKUs are fast moving parts that are used on many of the latest model cars. Others are parts that haven't been used on new vehicles in 20 years. Still, Subaru manages to have the right part in stock 99% of the time.



What's their secret? Neil Samuels of Subaru says that "it all comes down to effectively using the network of distribution centers." Each dealer has a primary distribution center called a "Facing DC" assigned to it. Ninety-three percent (93%) of the time, the right part is in stock at the Facing DC and the order can ship complete. If this was where the story ended, however, the result would be hundreds, or thousands of cars that couldn't get repaired until a part was back-ordered from the factory. Not a good scenario! The key for Subaru is managing the last 7% of items that aren't stocked at the Facing DC.

When an item is out of stock, Subaru first runs a substitution check. This is done using a powerful database in their ERP system that checks to see what other parts, if any, are mechanically compatible substitutes for the out-of-stock part. Often, a substitution can be made. Once the ERP outputs a list of acceptable substitutes, this list is passed over to the WMS for order distribution in one of three ways:

- Ideally, the substituted part is in the Facing DC and the entire order is filled from there.
- The next best scenario is to find another distribution center where all of the items on the order are in stock. In the earlier case study on Cabela's, the retailer checks the freight cost for several different shipping scenarios before determining how, or if, they will split an order. Not the case with Subaru. Due to the nature of its dealer contracts, the auto-maker has determined that it is always cheaper to fill the order complete from a single DC, regardless of its location.
- Only if no single DC can fill the complete order will Subaru perform order splitting. The WMS will split the order into several smaller ones and fill each one from a separate DC, shipping directly to the dealer.

For Subaru, managing "the last 7%" through effective order distribution has allowed it to provide customer service levels that are among the best in the industry.



Chapter Three: Required Actions

Fast Facts

- Leverage the entire network to fill orders, and move away from dedicated use facilities
- Rather than “rip and replace” disparate WMS systems, use a multi-site inventory visibility platform to manage globally Practice Sales Order Splitting to maximize service levels while containing costs

Whether a company is trying to move its performance in multi-site distribution from “Laggard” to “Industry Average,” or “Industry Average” to “Best-in-Class,” the following actions will help spur performance improvements:

Laggard Steps to Success

1. *Implement a Global Measurement System to benchmark performance*

It sounds simple, but only 1/3 of Laggard companies have any system in place to measure performance across multiple sites. Metrics that should be measured are percentage of orders that ship on time, percentage of orders that ship complete (regardless of how many facilities they ship from), percentage of back orders, percentage of inventory write-off due to spoilage or obsolescence, and number of inventory turns per year. In this way, a company can perform a competitive maturity assessment and map out a plan for improvement.

2. *Leverage the entire network to fill orders, and move away from dedicated use facilities*

Regionally aligned, multi-use facilities have proven to be the most effective means of filling orders for most industries. Leveraging the entire network starts with visibility of inventory so as to make better decisions. From there, two paths can be followed: inter-facility transfers or true distributed order management.

3. *Deploy WMS in overstock facilities for improved performance*

Laggards are much more likely to be using a two-tier network model. Often this occurs when the primary distribution center fills up, and the company signs a short-term lease for additional space in a nearby building. Companies are often reluctant to install any IT infrastructure in these overstock facilities, and often use clipboards and spreadsheets to manage the inventory here. Companies who have taken this approach should strongly consider rolling out their WMS to these facilities. WMS systems scale relatively well. Furthermore, the inefficiencies which creep in over time through manual systems can result in increased back-orders when newly received stock is not yet visible, and reduced amount of complete orders.



Industry Norm Steps to Success

1. *Rather than “rip and replace” disparate WMS systems, use a multi-site inventory visibility platform to manage globally*

Companies that have grown significantly through acquisition are often left with a network of distribution centers that operate on several different WMS systems. Each individual warehouse may be quite effective, but it is difficult to leverage the entire network for order fulfillment. Multi-site visibility systems are a visibility tool which sits on top of existing WMS systems and provides a global view of inventory and workflow. These tools can enable much more effective global use of inventory and improved customer service levels.

2. *Practice Sales Order Splitting*

Sales order splitting is one of the single best predictors of Best-in-Class performance. By filling orders on a line item basis, network efficiency can be maximized while still meeting customer service requirements. The level at which the split occurs varies by software architecture. Some ERP systems offer this functionality. Companies that practice order management in the WMS itself should investigate whether their WMS vendor offers this option. Bear in mind that simply splitting a sales order is usually not effective unless the accounting system can still invoice the customer for a single order. Many companies have found that a distributed order management module is the easiest way to gain this layer of functionality.

3. *Practice Basic Order Distribution by Stock-Out or Inventory Level*

Order distribution by stock-out selects the next available distribution center to fill an order if there is not sufficient inventory at the primary DC. Order Distribution by inventory level allows for dynamic inventory balancing across the entire network. If it is more advantageous, from an inventory perspective, to ship a SKU from a warehouse that is overstocked, those decisions are made automatically. In either scenario, the order can either be shipped entirely from the secondary warehouse, or split between primary and secondary.

Best-in-Class Next Steps

1. *Practice Advanced Distributed Order Management*

Advanced distributed order management can factor in such things as which DC will offer the lowest freight rate, and which distribution center has the oldest stock that might need to be sold first to avoid being written off. Companies will generally need to migrate to a commercial distributed order management system to gain this level of functionality.

2. *Practice Vendor Order Splitting*

Splitting orders can have payoffs on the inbound side as well. This is especially useful where inbound lead times are long. If an enterprise has global visibility of inventory and workflow, it can direct inbound product to the optimal distribution center where demand is likely to outweigh supply. Orders can be split prior to a vendor's shipment, or can be cross-docked and re-routed to the correct DC.



3. *Explore improved OMS/WMS/TMS alignment*

When customer service reps have improved visibility to inventory, workflow, and transportation rate and schedules, they can begin to make more effective order promises based upon the most efficient way to fill the orders in each of these areas. To do this requires close alignment of all three of the above software applications with a high level of visibility into all processes.

Aberdeen Insights – The Rich and the Poor...

The biggest chasm that separates Best-in-Class companies from Laggards is distributed order management capabilities. Best-in-Class companies were, on average, over TWO times more likely than Laggards to practice multi-site order distribution and sales order splitting.

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Appendix A: Research Methodology

Between February and March 2007, Aberdeen Group examined the performance, experiences, and intentions of more than 146 enterprises that were engaged in multi-site order fulfillment.

Responding executives completed an online survey that included questions designed to determine the following:

- The degree to which multi-site technology solutions are deployed in their operations and the financial implications of the technology
- The structure and effectiveness of existing installations of Distributed Order Management, Supply Chain Inventory Visibility, and Multi-Site WMS
- Current and planned use of multi-site technology to aid operational and promotional activities
- The benefits, if any, that have been derived from these initiatives

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information on strategies, experiences, and results.

The study aimed to identify emerging best practices for multi-site order fulfillment and provide a framework by which readers could assess their own capabilities.

Responding enterprises included the following:

- **Job title/function:** The research sample included respondents with the following job titles: logistics or supply chain (63%); IT (13%); procurement (6%); business process management (4%).
- **Industry:** The research sample included respondents exclusively from companies that have more than one distribution center. The actual industries of the responding companies varied greatly, and included: Retail (21%), Distribution (17%), Food and Beverage (11%), Wholesale (11%), Transportation & Logistics (9%), and Consumer Packaged Goods (11%). Other sectors responding included Medical Devices, Hi-Tech, Chemicals, and Aerospace/Defense.
- **Geography:** The majority of respondents (71%) were from North America. Remaining respondents were from Europe (16%), and other regions.
- **Company size:** About 47% of respondents were from large enterprises (annual revenues above US\$1 billion); 37% were from midsize enterprises (annual revenues between \$50 million and \$1 billion); and 16% of respondents were from small businesses (annual revenues of \$50 million or less).

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Table 4: PACE Framework

PACE Key
<p>Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:</p> <p><i>Pressures</i> — external forces that impact an organization’s market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive)</p> <p><i>Actions</i> — the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product/service strategy, target markets, financial strategy, go-to-market, and sales strategy)</p> <p><i>Capabilities</i> — the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products/services, ecosystem partners, financing)</p> <p><i>Enablers</i> — the key functionality of technology solutions required to support the organization’s enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)</p>

Source: AberdeenGroup, March 2007

Table 5: Competitive Framework

Competitive Framework Key
<p>The Aberdeen Competitive Framework defines enterprises as falling into one of the three following levels of FIELD SERVICES practices and performance:</p> <p><i>Best-in-Class (20%)</i> — Retail RFID practices that are the best currently being employed and significantly superior to the industry norm, and result in the top industry performance.</p> <p><i>Industry norm (50%)</i> — Retail RFID practices that represent the average or norm, and result in average industry performance.</p> <p><i>Laggards (30%)</i> — Retail RFID practices that are significantly behind the average of the industry, and result in below average performance</p>

Source: AberdeenGroup, March 2007

Table 6: Relationship between PACE and Competitive Framework

PACE and Competitive Framework How They Interact
<p>Aberdeen research indicates that companies that identify the most impactful pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute.</p>

Source: AberdeenGroup, March 2007

Appendix B: Related Aberdeen Research

Related Aberdeen research that forms a companion or reference to this report include:

- [*Demand Management in Consumer Industries*](#) (December, 2006)
- [*Technology Strategies for Inventory Management: How to Convert Inventory from Cost to a Competitive Advantage*](#) (September, 2006)
- [*Warehouse Automation--What's Really Working For Pallet, Case, and Piece Pick Operations*](#) (January, 2007)
- [*The Extended Warehouse Benchmark*](#) (December, 2006)
- [*The Warehouse Productivity Benchmark Report*](#) (November, 2006)
- [*Technology Strategies for Inventory Management: How to Convert Inventory from Cost to a Competitive Advantage*](#) (September, 2006)

Information on these and any other Aberdeen publications can be found at www.Aberdeen.com.

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