

Warehouse Management Software: Five Key Capabilities for Every Distribution Center

December, 2007

~ Underwritten, in Part, by ~



Executive Summary

Amongst distribution centers today, there is a growing schism between the haves and the have-nots. These companies are separated by a series of underlying enablers that serve as a springboard for more efficient operational processes. This report examines the correlation among five key process capabilities, the underlying technology that enables them, and improved performance in the distribution center.

Best-in-Class Performance

Aberdeen used four key performance criteria to distinguish Best-in-Class companies:

- Warehouse labor costs decreased year-over-year, relative to revenue
- Pick accuracy rates of 99%+
- Shipping accuracy rates of 99%+
- Perfect order rates of 99%+

Competitive Maturity Assessment

Survey results show that the firms enjoying Best-in-Class performance shared several common characteristics:

- Bin-level location management
- Paperless receiving
- Real-time put-away
- Order picking with mobile devices
- Cycle counting

Required Actions

In addition to the specific recommendations in Chapter Three of this report, to achieve Best-in-Class performance, companies must:

- Conduct a business process review
- Conduct a formal software vendor selection
- Upgrade their WMS to the current version
- Get on a regular maintenance and support program
- Consider high performance warehouse strategies like advanced pick methodologies, slotting, labor management, and speech-based warehousing advantage

Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations

“Accuracy went from 91% to 99%, allowing us to provide better customer service and avoid expensive errors...and the big labor savings have been in the office. We went from three people doing admin work to one person doing it on a part-time basis.”

~ Jud Harris, IT Director, Advantage North American, a 3rd party logistics provider, after implementing a WMS

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Chapter One: Benchmarking the Best-in-Class

Amongst distribution centers today, there is a growing schism between the "haves" and the "have-nots." These companies are separated by a series of underlying enablers that serve as a springboard for more efficient operational processes.

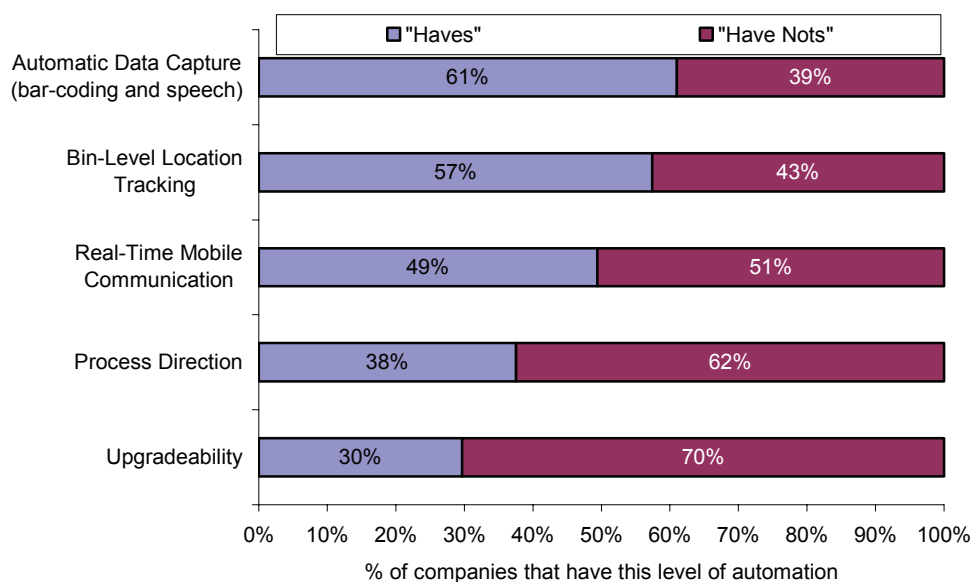
On one side of the rift stand companies with highly automated facilities. The day-to-day operation of the warehouse is planned and optimized with sophisticated Warehouse Management Software (WMS). Instructions are wirelessly send to workers equipped with mobile computers, who execute the tasks and confirm their actions with bar-code scans. The location of every item in the warehouse is tracked in real time, and there is little or no administrative work required to operate the warehouse.

On the other side stand companies operating with manual methods. Warehouse managers plan all processes and hand out stacks of paper instructions. Pickers roam the warehouse searching for product, with little or no ability to optimize their work. Each order is carefully checked for accuracy in a labor-intensive downstream process. Behind the scenes, a team of clerks painstakingly enters data from handwritten notes into the accounting system to record what was received, moved, picked, or shipped.

Fast Facts

- √ Only 47% of companies have a "true" WMS in their distribution centers
- √ Best-in-Class companies are nearly twice as likely as their peers to be concerned with the rising cost of warehouse labor
- √ Best-in-Class companies are 27% more likely than their peers to focus on creating an agile and flexible warehouse adaptable to change
- √ Average and Laggard companies are **two-times** more likely than Best-in-Class companies to be struggling to gain visibility in the warehouse

Figure I: Adoption Levels of Warehouse Enablers



By this measure, only 47% of companies are on the "have" side of the rift, with a "true" WMS in their distribution centers (Figure I).

Benchmarking Your Distribution Center

On the surface, it would seem that the "haves" would naturally score higher marks on any warehousing report card measuring operational performance. In December, 2007, Aberdeen set out to investigate and compare the performance of Best-in-Class companies, and the degree to which they have automated their warehouses compared to their peers. The findings reveal a strong correlation between basic process automation and improved warehouse performance. Aberdeen used four key performance criteria to distinguish the Best-in-Class companies from their peers (Table 1).

Table 1: The Maturity Class Framework

Definition of Maturity Class	Mean Class Performance
Best-in-Class: Top 20% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ Warehouse labor costs decreased year-to-year, relative to sales ▪ Pick accuracy rates of 99%+ ▪ Shipping accuracy rates of 99%+ ▪ Perfect order rates of 99%+
Industry Average: Middle 50% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ Warehouse labor costs remained the same or increased by < 5% year-to-year, relative to sales ▪ Pick accuracy rates of 90 to 98% ▪ Shipping accuracy rates of 90 to 98% ▪ Perfect order rates of 90 to 98%
Laggard: Bottom 30% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ Warehouse labor costs increased by > 5% year-to-year, relative to sales ▪ Pick accuracy rates below 90% ▪ Pick accuracy rates below 90% ▪ Perfect order rates below 90%

Source: Aberdeen Group, December, 2007

Aberdeen also examined two additional KPIs that are a good barometer of a healthy distribution center, though they were not used in the Best-in-Class performance calculation. These metrics are listed in Table 2.

Table 2: Additional Benchmarking Metrics

Performance Range	Performance
Top 20% of respondents	<ul style="list-style-type: none"> ▪ Inventory accuracy rates of 99%+ ▪ Administrative personnel: one or fewer
Middle 50% of respondents	<ul style="list-style-type: none"> ▪ Inventory accuracy rates of 86-98% ▪ Administrative personnel: two to five
Bottom 30% of respondents	<ul style="list-style-type: none"> ▪ Inventory accuracy rates below 86% ▪ Administrative personnel: more than six

Source: Aberdeen Group, December 2007

Administrative labor is one cost area that is frequently overlooked when evaluating technology and process change in the warehouse. Manual warehouse management systems often involve a significant amount of clerical work to maintain. Paper receiving logs must be transcribed into the accounting system before there is visibility of newly arrived goods. Put-away locations and stock moves must be keyed into a location system of some kind. Picking instructions must be printed and noted with locations of items. Pick logs must be keyed back into the ERP so that customers can be invoiced based on actual quantities of goods shipped. If lot and serial numbers must be tracked, even more clerical work is required as the lot number of each item picked must be noted and keyed into the system.

Often, this administrative cost does not get factored into a warehouse budget, but gets buried in a larger G&A budget. As a result, many companies do not realize the true cost of their manual warehouse processes. As this report will show, most, if not all, of the manual processes discussed above can be eliminated through the use of a real-time, mobile WMS. Measuring the current baseline cost of admin labor can be a key first step in evaluating if a change is needed.

The Best-in-Class PACE Model

Table 3 illustrates Aberdeen's PACE framework, which serves as a guide to viewing warehouse management through the lens of Best-in-Class companies. The PACE framework answers key questions like: Which warehousing pressures are most affecting Best-in-Class organizations? What strategic actions do they plan to take in response? What capabilities do Best-in-Class companies have to a greater degree than their peers? What enabling technology are these companies making better use of than their peers?

Table 3: The Best-in-Class PACE Framework

Pressures	Actions	Capabilities	Enablers
<ul style="list-style-type: none"> High cost and/or low availability of warehouse labor 	<ul style="list-style-type: none"> Improve warehouse throughput Reduce or contain warehouse labor costs 	<ul style="list-style-type: none"> Bin-level location management Paperless receiving Real-time put-away and stock moves Order picking with mobile devices Incremental Cycle counting 	<ul style="list-style-type: none"> Warehouse management software Wireless networking in the warehouse Mobile warehouse devices (handheld computers, bar-code scanners, wearable computers)

Source: Aberdeen Group, December, 2007

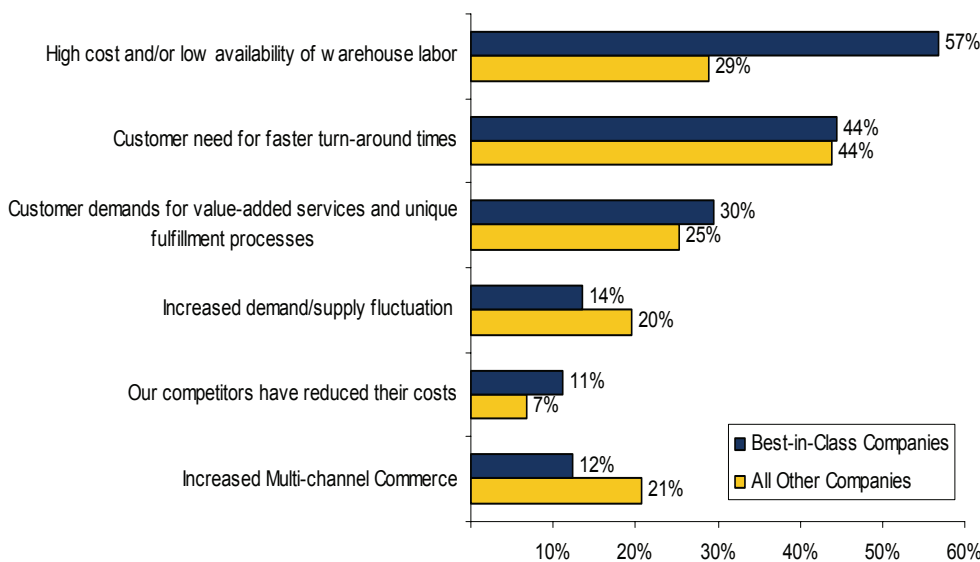
Warehouse Pressures

A consistent finding of Aberdeen's research is that while Average and Laggard companies feel challenged with simply meeting their customer service objectives, Best-in-Class companies have moved beyond this day-to-day struggle and are free to focus on operational efficiency. Figure 2 shows that Best-in-Class companies cite labor cost and availability as the top pressure causing them to seek warehouse improvement, while their peers are struggling to just get orders out the door on time and meet customer demands.

Fast Facts

- √ Best-in-Class companies are nearly twice as likely as their peers to be concerned with the rising cost of warehouse labor

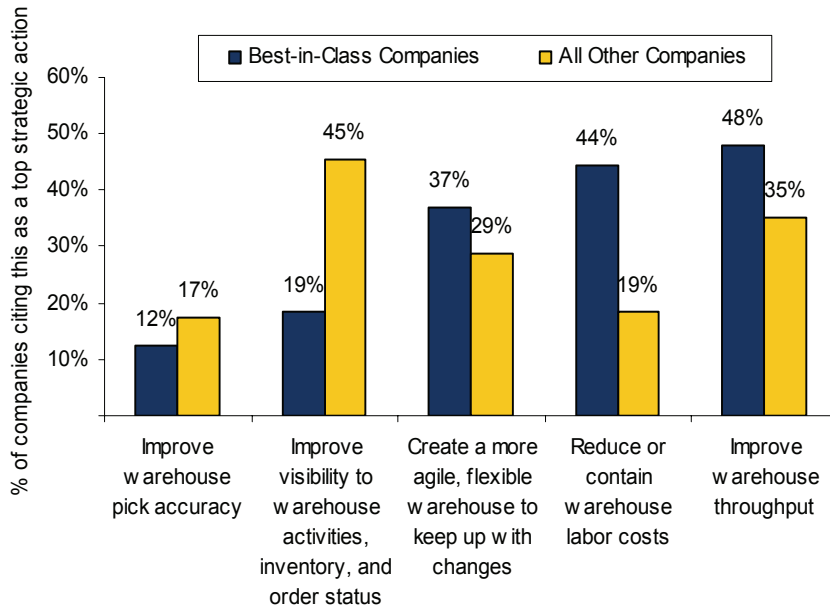
Figure 2: Top Pressures Driving Warehouse Improvement



Source: Aberdeen Group, December, 2007

Because they've conquered the day-to-day struggle to survive, Best-in-Class companies are free to address the long-term health of their enterprise. Figure 3 shows the top strategic actions that are being planned by Best-in-Class companies, as well as their lower performing peers.

Figure 3: Top Strategic Actions Planned for the Warehouse



Fast Facts

- ✓ Best-in-Class companies are 27% more likely than their peers to focus on creating an agile and flexible warehouse adaptable to change
- ✓ Average and Laggard companies are two-times more likely than Best-in-Class companies to be struggling to gain visibility in the warehouse

Source: Aberdeen Group, December 2007

Best-in-Class companies have their strategic sights set on goals like improving throughput, cost containment, and creating a flexible, agile warehouse that can rapidly adapt to changing business processes. Their lower performing peers are focused getting orders out the door, and on gaining better visibility of what's happening in the operation. These are certainly laudable goals, but achieving them will not give a company a competitive advantage. Achieving 99% perfect orders, and having site-level visibility into inventory and work flow will simply bring a Laggard company on par with their peers. Only at that point will they be free to focus on operational efficiency, the true differentiator in today's competitive environment.

If a company has been struggling to do this for some time and not seeing much progress, it is time to consider a basic technology investment to enable a breakthrough. Chapter 2 will examine five key areas where using a true WMS can greatly assist in this effort.

Chapter Two: Benchmarking Requirements for Success

The previous chapter showed that Best-in-Class companies have established acceptable levels of customer service and are now focused on reducing labor costs in the warehouse as one of their top strategic goals. The exact strategy required to accomplish this will vary somewhat by the nature of each individual distribution center. There are, however, a series of core capabilities that will positively impact nearly any warehouse, as they center on the basic processes of inbound and outbound product flow. Table 4 shows how Best-in-Class companies have a very different set of capabilities from their lower performing peers.

Table 4: The Competitive Framework

	Best-in-Class adoption rate	Average adoption rate	Laggard adoption rate
Process Capabilities	Bin-level location management:		
	79%	55%	44%
	Paperless receiving:		
	56%	29%	29%
	Real-time put-away:		
	57%	35%	31%
	Order picking with mobile devices:		
	46%	25%	36%*
Knowledge Capabilities	Cycle counting:		
	79%	60%	46%
Technology Usage	Online inventory and order data available for internal users across multiple facilities		
	52%	46%	40%
Performance Capabilities	Use bar-code scanners to confirm warehouse transactions:		
	75%	53%	54%*
	Use real-time mobile devices to process transactions		
	73%	42%	42%
Performance Capabilities	Frequent measuring and reporting of warehouse performance data		
	42% daily	16% daily	8% daily

Source: Aberdeen Group, December 2007

**It is interesting to note that Laggards are more likely than Average companies to use mobile devices in order picking. It is important to draw a distinction between "real-time" and "offline" mobile devices. Aberdeen research shows that Laggard companies are more likely than Average companies to use a more obscure method of picking that involves using a mobile bar-code scanner to track which items were picked offline, and then connect the device to system after the fact to upload the data. As a result, a picker may find out that*

Fast Facts

- ✓ Best-in-Class companies are 59% more likely than their peers to practice bin-level location management
- ✓ Best-in-Class firms are 92% more likely than their peers to practice paperless receiving
- ✓ Best-in-class companies are 73% more likely than their peers to practice real-time put-away in the warehouse
- ✓ Best-in-Class companies are 50% more likely than their peers to practice order picking with mobile devices
- ✓ Best-in-Class firms are 49% more likely than their peers to practice cycle counting over physical inventories.

he made an error long after the order was picked, and the correction process consequently takes much longer. This method usually produces unsatisfactory results, as a company makes a significant investment in hardware to gain error checking capabilities, but doesn't get any of the benefits of real-time process direction and "instant" error notification.

Five Key Process Capabilities in the Warehouse

Table 4 above listed five key process capabilities that are much more heavily adopted by Best-in-Class companies: bin-level location management, paperless receiving, real-time put-away and stock moves, order-picking with mobile devices, and cycle counting. Figure 4 graphically illustrates how Best-in-Class companies are disproportionately more likely to have adopted these five capabilities - by an average of 64% greater likelihood.

Fast Facts

- √ Best-in-Class companies are 64% more likely than their peers to have automated their warehouse processes

Figure 4: Five Key Process Capabilities in the Warehouse

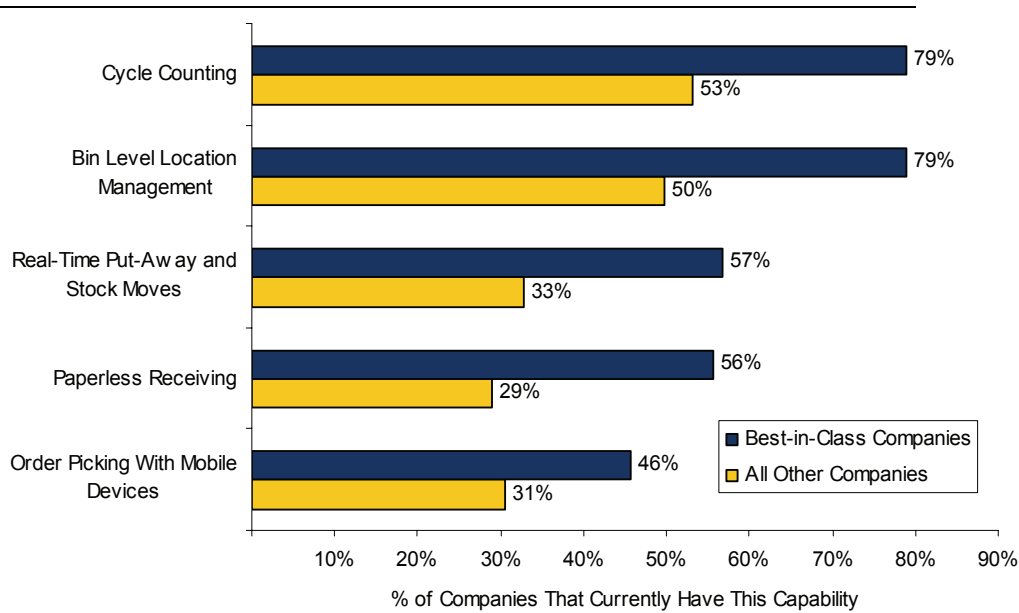


Table 5 examines each of these five capabilities in depth, and shows how top companies have used enabling technology to automate them.

Table 5: How Companies Have Automated the Five Processes

Capability	How Some Companies Have Automated This Process	Business Value
Bin-level location management	The WMS maintains a real-time log of the contents of every bin, tracking all product attributes. Product can be stored in an unlimited number of bin locations, and the system tracks them all. When orders are received for product, the WMS performs a hard-allocation - it assigns product in a specific bin to a specific order. Regardless of the sequence in which orders are picked, no picker should ever arrive at an empty bin. The system can pro-actively trigger a replenishment t of a primary location, or simply assign a picker to pick from an alternate, overflow location. Lot and attribute-level allocation can also be performed, to ensure that the correct item is earmarked for the right order.	Labor savings, greater fill rate, improved stock rotation

Capability	How Some Companies Have Automated This Process	Business Value
Paperless auditing of inbound goods	When an incoming load arrives, a worker enters the purchase order number into a mobile handheld computer which electronically retrieves the latest list of items which are expected on the order. As each item is received, its bar-code is scanned and it is checked off a list in the WMS. If incoming goods are not already bar-coded, then a bar-code label prints for each unit which is received. This label is applied at the time of receipt and can be used for fast, positive identification of goods in all downstream processes. All goods are available for sale or use in the ERP as soon as they are received. There is no need for redundant data entry. Managers handle exceptions only.	Labor savings, administrative labor savings, greater fill rate, improved labor utilization downstream, improved pick accuracy and perfect order percentage.
Real-time put-away and stock moves	A worker performs a put-away or stock move. Using a mobile handheld computer, he scans the bar-code label on the product he is moving, and the system recommends the optimal location for the product to be placed. The worker can select that location, or override it and place it in another location at his discretion. He scans the bar-code of the destination location to ensure that he has placed the item in the correct place. The WMS is immediately updated as to the status of the goods in real-time, and even knows when goods are in-transit, being moved from one location to another.	Improved warehouse slotting, labor savings, administrative labor savings, improved accuracy
Order picking with mobile devices	The WMS builds a group of several orders with some common line items that are all to be picked at the same time. The picker receives instructions, one line at a time, on a wireless handheld computer. He is instructed to proceed to a bin location, pick an item, and place it in a particular container that corresponds to an order. He scans the bin to confirm he is at the correct location, as well as the container the item is placed in to confirm that is correct as well. He can optionally scan the item itself if it is bar-coded. Any unexpected shortages are noted on the handheld computer at the time of picking, with no need to make paper notations and transcribe them later. On a single trip through the warehouse, all the orders are picked, and there is no need to check 100% of the orders after the fact for accuracy.	Labor savings, administrative labor savings, improved accuracy,
Incremental cycle counting	Cycle counting replaces the annual physical inventory. Under this arrangement, a certain number of bins or SKU's are audited every day. Over time, the entire distribution center is accounted for. SKU's or bins where there is a high level of activity can be flagged for more frequent counting to ensure that accuracy is maintained. Spot cycle-counting can be triggered any time an error is suspected. Cycle counting can take place during the normal operation of the warehouse, with little or no disruption of activities. Mobile handheld computers direct the work and bar-code scans ensure accuracy and speed. Cycle counting can even be interleaved with the day-to-day work of receiving, put-away, and picking.	Labor savings, reduced warehouse downtime, improved inventory accuracy

Source: Aberdeen Group, December, 2007

The reward from automating the five capabilities can be significant. Consider a few real life examples of companies that have benefited:

- IKEA is a global furniture retailer with 250 stores in 33 countries, supported by 33 distribution centers worldwide. Installing a WMS and implementing **cycle counting** allowed them **to save nearly 3,000 man-hours per facility** by not having to perform an annual

physical inventory. They've also **avoided shutting each facility down for four days** during the inventory process.

- M.S. Walker, a mid-sized liquor distributor was able to **raise perfect order rates from 85% to 99.6%, while at the same time reducing labor costs relative to revenue.** The company accomplished this by implementing a WMS and practicing **order picking with mobile devices**, among other things.
- A large office supply retailer implemented a WMS and has gained real value from the ability to practice **real-time put-away and stock moves.** After implementing the WMS, the company reported being able to **cut back their workforce by 15%** after the initial start-up period was complete.
- Herroom.com, an online retailer of intimate apparel recently implemented a WMS for their distribution center and began **order picking with mobile devices.** For the first time, they are **shipping nearly 100% of their in-stock orders on-time**, and accuracy has significantly improved as well.

Third-Party Logistics Provider Uses WMS to Reduce Admin Costs, Improve Accuracy

One company that has greatly benefited from implementing a WMS is Aadvantage North American, a small third-party logistics provider with annual revenues of \$2.5 million. The company was transitioning from primarily handling full pallets to more of a case-pick and piece-pick operation. As a result, the amount of paperwork required to pick and ship an order was dramatically increasing. During receiving, put-away, and picking, workers would perform their tasks with a clip-board in hand, making notes on a paper log. Afterwards, a team of three full time employees in the office would manually enter all of the paper data into the company's accounting system. These same workers were spending a significant amount of time preparing custom reports for each client in spreadsheets, since there was no true reporting engine that could serve this purpose. The company only had 91% inventory accuracy—not a good situation for a company specializing in inventory handling.

“Lot's of our mistakes were coming from simple human error,” says Jud Harris, IT Director for Aadvantage. “Our workers would have sloppy handwriting, and mistakes would get made when we transferred the information into our system.”

continued

Third-Party Logistics Provider Uses WMS to Reduce Admin Costs, Improve Accuracy

In June, 2007, Aadvantage decided that it was time to implement a true WMS in their distribution center. After evaluating a number of options, the company settled on an “on-demand” WMS that was remotely hosted by the software developer on their own servers.

“We couldn’t afford to add IT staff and have a costly implementation,” says Harris. “An on-demand WMS was a ‘must-have’ for us. We went live in 30 days, and we don’t have to maintain the system in-house.”

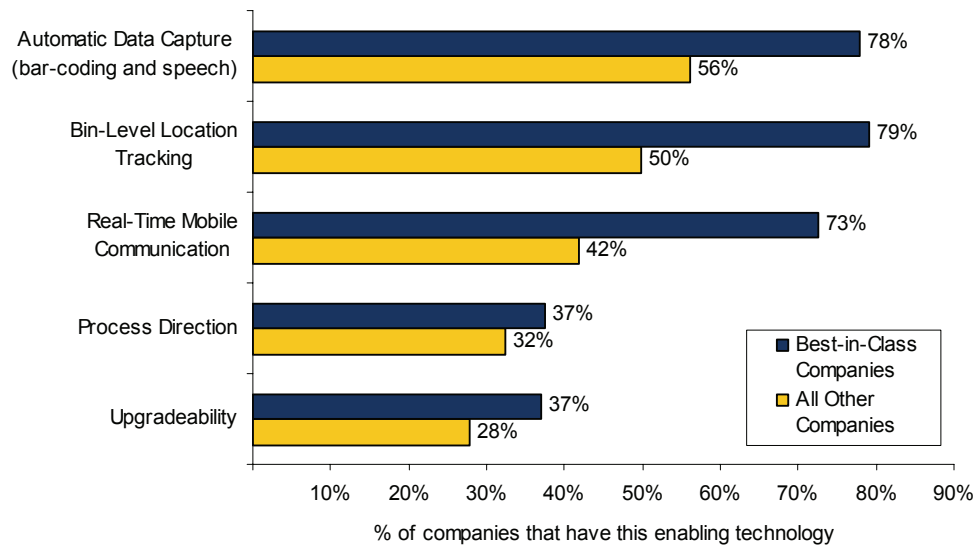
Now, instead of writing down information on paper logs, workers are equipped with mobile handheld computers. Bar-code scanning replaces handwriting, and all transactions are directed and confirmed in real-time. The results have been impressive.

“Accuracy went from 91% to 99%, allowing us to provide better customer service and avoid expensive errors,” says Harris. “We only lost one box last quarter reducing shrinkage costs by thousands of dollars. And the big labor savings have been in the office. We went from three people doing admin work to one person doing it on a part-time basis.”

Enabling Technology

As Chapter 1 pointed out, there is a series of underlying enablers that allow warehouses to automated the five capabilities more easily. Aberdeen's research shows that Best-in-Class companies are more successful in implementing the five capabilities because they have invested in this underlying technology to a greater extent than their peers (Figure 5).

Figure 5: Enabling Technology Used by Best-in-Class Companies



Collectively, these enabling components are available in the form of WMS. A WMS consists of several key components, which, working together, enable the five key process capabilities:

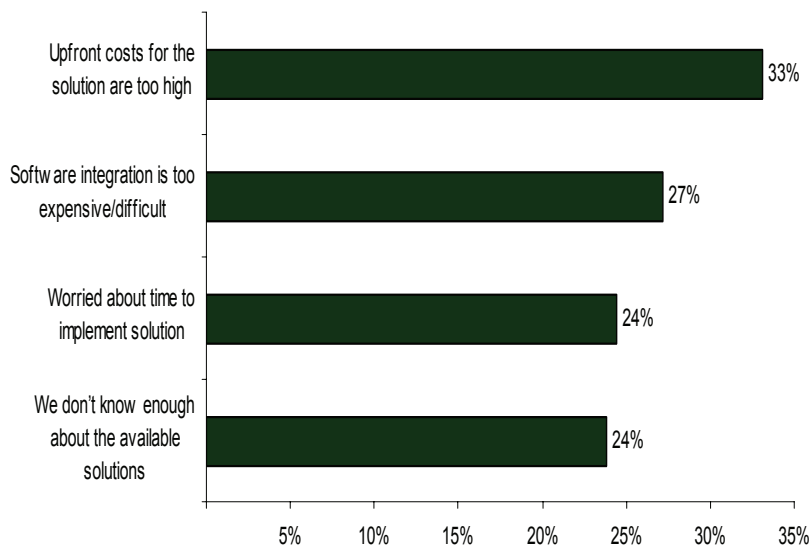
- The WMS software application
- A wireless network in the warehouse
- Workers equipped with mobile devices (handheld computers, bar-code scanners, headsets, etc.)
- Bar-code label printers

Although it may be possible to achieve excellence in these areas without a true WMS, using this enabling technology will certainly make these processes easier to adopt and more sustainable.

Overcoming Challenges to Adoption

With such a compelling business case for use of real-time, mobile warehousing, why do many companies still operate with inefficient manual processes? As Figure 6 shows, top challenges to adoption are upfront technology cost, integration fears, implementation time, and lack of knowledge.

Figure 6: Top Challenges to WMS Adoption



Source: Aberdeen Group, December, 2007

Are these concerns valid? Each company must make their own decision in that regard. However Aberdeen's research has provided some interesting insights into how a company might overcome some of these potential roadblocks on the road to improved performance.

Fast Facts

- ✓ Best-in-Class companies are 39% more likely than their industry peers to utilize automatic data capture / bar-code scanning as a part of their warehouse management software
- ✓ Best-in-Class companies are 58% more likely than their industry peers to utilize bin-level location tracking as a part of their warehouse management software
- ✓ Best-in-Class companies are 73% more likely than their industry peers to utilize real-time mobile communication as a part of their warehouse management software

Aberdeen Insights--Overcoming Challenges to WMS Adoption	
Challenge	Responses to Consider
Upfront cost of WMS	Consider on-demand WMS with a monthly usage fee instead of an upfront license fee; explore the labor savings available both in direct warehouse labor and administrative labor as a means of offsetting costs.
Integration fears	"Over-document" every aspect of how the two systems will need to communicate.
Long implementation time	A considerable amount of time can be saved if supply chain processes have been mapped out up-front. There is nothing to lose by beginning the process early in a WMS implementation.
Lack of knowledge of available solutions	Consider the following resources to learn more: read industry publications, hire a consulting firm/systems integrator, read market research, conduct online research at vendor websites, network with industry peers.

While these challenges may seem formidable, many companies have experienced great success in overcoming them, as the following case study illustrates.

Liquor Distributor Overcomes Obstacles and Goes from Laggard to Best-in-Class
<p>M.S. Walker is a wine and spirits distributor based in Massachusetts, with annual revenues of around \$250 million. In 2004, the company decided to expand their operations to include a second distribution center. The company was faced with another major decision at the same time—would they implement a modern WMS system? By Aberdeen’s measure, MS Walker was a “Laggard” company at the beginning of the process—they had an 85% perfect order percentage, and warehouse labor costs per transaction were steadily increasing. The company knew that a WMS had the potential to elevate their performance, but they were held back by the usual challenges of upfront cost, time to implement, and data integration fears.</p> <p>MS Walker was able to successfully overcome these challenges and went live with a WMS in April, 2006. Over the next year, the company elevated their performance from Laggard to Best-in-Class status. Perfect orders jumped from 85% to 99.6%, and labor costs have declined relative to revenues. How was MS Walker able to get past the typical issues that stymie many other companies?</p> <p style="text-align: right;"><i>continued</i></p>

Liquor Distributor Overcomes Obstacles and Goes from Laggard to Best-in-Class

Michael Saitow, CIO of MS Walker provided some valuable insights in a recent interview with Aberdeen. Regarding cost, Saitow says that, “based on labor savings and other operational efficiencies, we estimated that we would achieve a 24 month return on investment from the system. When we presented this case to our potential financiers, they all were willing to fund the project. In the end, it was this willingness of outside banks to back the project that helped persuade both our own executive team and our primary bank that this was a solid project that should be funded.”

On fears of a long implementation time, Saitow says that before they were ready to commit funds to the project, they spent three months re-engineering business processes and getting that part of the project out of the way. “Process engineering is absolutely vital to the success of a project,” says Saitow. “All in all, it was six months of setup work to get us to the purchase order, and seven months of pure implementation.”

Regarding the interface between the ERP and the WMS, Saitow says that this was a key concern from the very beginning stages of the project. “We didn’t allow data integration to derail the project, because we planned for it up front...we identified each interface point, along with the minimum number of data fields required to accomplish the process. We documented the format of each data transmission in a spreadsheet, and shared that information with the vendors we were evaluating.”

Not every company can jump from Laggard to Best-in-Class status in such a short period of time, but with careful planning and a willingness to power through obstacles, companies like MS Walker show that rapid operational improvements can be made.

Chapter Three: Required Actions

Whether a company is trying to move its performance in warehouse management from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help spur the necessary performance improvements:

Laggard Steps to Success

- **Conduct a business process review.** One of the challenges in warehouse automation is the wide range of business processes required from one company to the next, and the difficulty in accommodating all of them with software. Even seasoned professionals have fallen into the trap of walking through a warehouse for an hour or two and assuming that they "understand" all the complexities that the software will have to manage. Practices vary by industry, by volume, by the nature of goods sold, and by countless other variables. Thoroughly documenting current processes and connecting them with desired processes is a vital first step to improvement.

Industry Average Steps to Success

- **Conduct a formal software vendor selection.** When a company chooses to implement a new WMS for the first time, it is well served by thoroughly evaluating the available solutions. Some companies fall into the trap of zeroing in on a particular vendor early in the process and not fully vetting all of their options. Some points to consider during this process:
- **Create a specific requirements document.** Convert the Business Process Review (see "Steps for Laggards") into a detailed requirements document that is sent to each vendor. Allow vendors to indicate which features currently exist as standard functionality, which ones are user-configurable, and which ones will require extensive customization or source code modifications. Avoid making any custom changes that cannot be easily upgraded.
- **Host scripted demos for the finalists.** It is easy for a vendor to show off their product in a demo of their own devising. A scripted demo puts the power into the hands of the purchaser, by requiring the vendor to demonstrate certain specific functionality they may be unique or challenging. Create three or four scenarios that reflect the realities of the operation and which test the ability of the WMS.
- **Upgrade WMS to the current version.** Aberdeen research shows that 48% of companies with a WMS have a version that is at least five years old. Best-in-Class companies are almost three times more likely than their peers to be operating the current version of

Fast Facts

- √ Laggard companies should conduct a thorough Business Process Review prior to adopting any technology solutions.
- √ Industry Average companies should make upgrading their WMS to the most current version a top priority
- √ Best-in-Class companies should focus on implementing high-performance capabilities in the warehouse and getting the most out of their WMS

their WMS. When companies operate on outdated versions of software, they are not able to take advantage of new functionality in areas like slotting, labor management, or speech-based warehousing. Furthermore, they may be operating with a version of the system that does not support their own changing business processes. If upgrading seems prohibitively expensive, begin evaluating other software providers. This provides perspective as to what pricing and functionality is available, and causes your WMS vendor to be more willing to offer attractive upgrade pricing.

Best-in-Class Steps to Success

- **Get on a regular maintenance and support program.** Best-in-Class companies are 49% more likely to have a maintenance and support contract with their original software provider. Most vendors offer a maintenance and support plan that costs 15-25% of the total software price annually, split into monthly installments. In return, the vendor provides product support and regular upgrades. It can be tempting to cut corners in this area and rationalize that this monthly fee would be better spent elsewhere. However, a discussion with any company that is trapped with a decade-old legacy system that was not regularly enhanced and upgraded will show the pain (and expense) of trying to play catch-up after the fact.
- **Consider high performance warehouse strategies.** In August, 2007, Aberdeen published a report outlining nine ways that companies already operating a WMS can take better advantage of high performance features. The report outlined how strategies like advanced pick methodologies, slotting, labor management, and speech-based warehousing can all have a positive impact on cost reduction and improved customer service. A company with Best-in-Class performance that is operating on the current version of their WMS should consider these nine strategies as a means of establishing a sustainable competitive advantage.

Related Research

["High Octane Warehousing-- How Top Companies Improve Performance Through Labor Management, Slotting, and Voice"](#)

Aberdeen Insights - Summary

There is a strong correlation between the technology "have-nots" and the performance laggards, and a similar connection between companies with a powerful layer of enabling technology and Best-in-Class performance. Companies should consider taking the leap to real-time, mobile warehousing, viewing it as a long term platform for growth. Once the five basic process capabilities have been automated, and the company is reaping the rewards in terms of reduced labor costs and improved customer service, an organization can begin to explore high performance capabilities that will enable this efficiency to continue.

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Appendix A: Research Methodology

Between November and December 2007, Aberdeen examined the use, the experiences, and the intentions of more than 552 enterprises managing warehouses in a diverse set of distribution enterprises.

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

Responding enterprises included the following:

- *Job title / function:* The research sample included respondents with the following job titles: logistics, supply chain, and information technology managers and directors (60%); vice-president, CIO, or CFO (14%); consultants (9%); senior management / CEO, COO, president (8%); staff (6%).
- *Industry:* The research sample included respondents from a very wide variety of industries, including: distribution (13%), transportation / logistics (10%), consumer packaged goods (8%), retail (8%), food / beverage (6%), and wholesale (5%).
- *Geography:* The majority of respondents (69%) were from North America. Remaining respondents were from Europe (13%), the Asia-Pacific region (11%), the Middle East and Africa (5%), and South / Central America / Caribbean (2%).
- *Company size:* Twenty-seven percent (28%) of respondents were from large enterprises (annual revenues above US \$1 billion); 39% were from midsize enterprises (annual revenues between \$50 million and \$1 billion); and 33% of respondents were from small businesses (annual revenues of \$50 million or less).
- *Headcount:* Twenty-three percent (23%) of respondents were from small enterprises (headcount between 1 and 99 employees); 43% were from midsize enterprises (headcount between 100 and 999 employees); and 34% of respondents were from large businesses (headcount greater than 1,000 employees).

Solution providers recognized as sponsors of this report were solicited after the fact and had no substantive influence on the direction of the Warehouse Management Software report. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

Study Focus

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

- √ The degree to which WMS is deployed in their distribution operations and the financial implications of the technology
- √ The structure and effectiveness of existing WMS implementations
- √ Current and planned use of WMS to aid operational and distribution activities
- √ The benefits, if any, that have been derived from WMS initiatives

The study aimed to identify emerging best practices for WMS usage in warehousing, and to provide a framework by which readers could assess their own management capabilities

Table 6: The PACE Framework Key

Overview
<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>Pressures — 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>Actions — 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>Capabilities — the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing)</p> <p>Enablers — 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: Aberdeen Group, December 2007

Table 7: The Competitive Framework Key

Overview	
<p>The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance:</p> <p>Best-in-Class (20%) — Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance.</p> <p>Industry Average (50%) — Practices that represent the average or norm, and result in average industry performance.</p> <p>Laggards (30%) — Practices that are significantly behind the average of the industry, and result in below average performance.</p>	<p>In the following categories:</p> <p>Process — What is the scope of process standardization? What is the efficiency and effectiveness of this process?</p> <p>Organization — How is your company currently organized to manage and optimize this particular process?</p> <p>Knowledge — What visibility do you have into key data and intelligence required to manage this process?</p> <p>Technology — What level of automation have you used to support this process? How is this automation integrated and aligned?</p> <p>Performance — What do you measure? How frequently? What’s your actual performance?</p>

Source: Aberdeen Group, December 2007

Table 8: The Relationship Between PACE and the Competitive Framework

PACE and the 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 those decisions.</p>

Source: Aberdeen Group, December 2007

Appendix B: Related Aberdeen Research

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

- [High Octane Warehouses--How Top Companies Use Capabilities Like Labor Management, Slotting, and, Speech-Based Warehousing, August 2007](#)
- [Technology Strategies for Multi-Site Warehouse and Order Management, April 2007](#)
- [Warehouse Automation--What's Really Working For Pallet, Case, and Piece Pick Operations, January 2007](#)

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

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