Aberdeen Group
A Harte-Hanks Company

Inventory Visibility, Tracking and Traceability:

Meeting Customer Expectations on the Store Shelf

June 2010

Sahir Anand

~ Underwritten, in Part, by ~

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Executive Summary

Between May and June 2010, Aberdeen surveyed 100 retail enterprises to determine the current state of inventory operations. Our data indicates that the foremost inventory-related pressure (selected by 41% of responding retailers) is "lost sales opportunities emanating from out-of-stock inventory" in stores and channels. During a revival phase in the retail industry, the out-of-stock pressure is a deeply troubling sign when one considers that the next two pressures are related to "high inventory holding costs" and "excessive inventory in channels and warehouses."

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

Best-in-Class Performance

Aberdeen used the following three key performance criteria to distinguish Best-in-Class companies:

- Current on-time order delivery rate: 95.3%
- Year-over-year increase in inventory turns: 17%
- Year-over-year decrease in cost of goods sold: 4%

Competitive Maturity Assessment

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

- Best-in-Class retailers are on average 1.5 times as likely as all others (Industry Average and Laggard companies combined) to adopt knowledge management tools for enhancing their inventory data collection, measurement, and tracking.
- Best-in-Class retailers are 1.6 times as likely as Laggard retailers to provide inventory visibility across a single channel or the entire cross-channel enterprise.
- Best-in-Class retailers are on-average 1.6 times as likely as all others to use standard bar code asset tracking systems, Electronic Data Interchange (EDI) platforms, and inventory reporting dashboards.

"We faced a business challenge related to poor in-stock rate (85%) and flat turns at 3.0. We focused on inventory accuracy. We installed a new demand-supply based inventory model that balanced our lost margin with inventory carrying costs to set inventory levels that drive the maximum profit. As a result, we not only increased our in-stock to 97% but also experienced strong turn improvement."

~ Richard Tannenbaum, Vice-President Supply Chain and Inventory Operations, The Vitamin Shoppe

Required Actions

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

- Process store/channel daily inventory reports for performance tracking
- Increase enterprise-wide visibility into unit-level inventory availability for rapid replenishment decisions
- Implement a POS data polling and analysis strategy for ascertaining inventory demand

Telephone: 617 854 5200
Fax: 617 723 7897

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Telephone: 617 854 5200
Fax: 617 723 7897

Chapter One: Benchmarking the Best-in-Class

Retail Opportunity for Inventory Accuracy, Visibility, and Tracking

Even as retailers are hoping to see more clear signs of an economic rebound, these companies need immediate strategies to tackle challenges related to out-of-stock costs, high lead times for delivery of fast moving goods, and unacceptable levels of slow moving on-hand inventory in stores and warehouses. All three challenges can be addressed, to a major extent, by enabling processes that augment inventory accuracy, real-time inventory visibility, and tracking. As a result, retailers can plan and execute overall inventory flow to the store shelf in a timely and accurate manner.

Aberdeen Group data reveals that an astounding 70% of retailers rate themselves "average" or "below average" on their inventory management processes. Aberdeen's May 2009, *Retail Inventory Optimization* benchmark report revealed that while 75% of Best-in-Class (see definition of maturity classes on page eight of this report) retailers indicate the ability to provide enterprise-wide visibility into Stock Keeping Unit (SKU) level availability, only 40% of Laggard retailers currently possess similar capabilities. Moreover, only a third of retailers are using traceability tools for inventory tracking. Visibility into product movement (on-hand and in-transit active, in-active, discount, clearance, and discontinued merchandise) is imperative for creating cohesive replenishment, merchandising, and sales forecast plans and overall execution of Sales and Operations Plans (S&OP).

The lack of inventory accuracy, visibility, and tracking capabilities is one of the main causes for under-performance within inventory operations. Some of the inventory-related business and IT complexities that retailers are currently facing include:

- A lack of focus on timely replenishment of fast moving items leading to out-of-stocks
- Overstated or understated inventory leading to inventory inaccuracy
- Too much focus on pre-emptive buying of slow-moving items leading to high inventory holding costs

In addition to these factors, other complexities include supplier non-compliance with order cycle times and on-time delivery requirements, emergence of new sales channels, and lack of responsiveness towards short-term demand adjustments.

Fast Facts

√ The foremost inventory-related pressure impacting 41% of retailers is lost sales opportunities emanating from out-of-stock situations in stores and channels

√ Nearly half (40%) of Best-in-Class retailers are implementing a comprehensive inventory optimization strategy that takes into account shelf or item-level inventory flow that is related to customer purchase behavior

"Low velocity items are most expensive to handle. We are trying to cut down lead time and take advantage of inventory that is sitting within the four walls by increasing enterprise visibility."

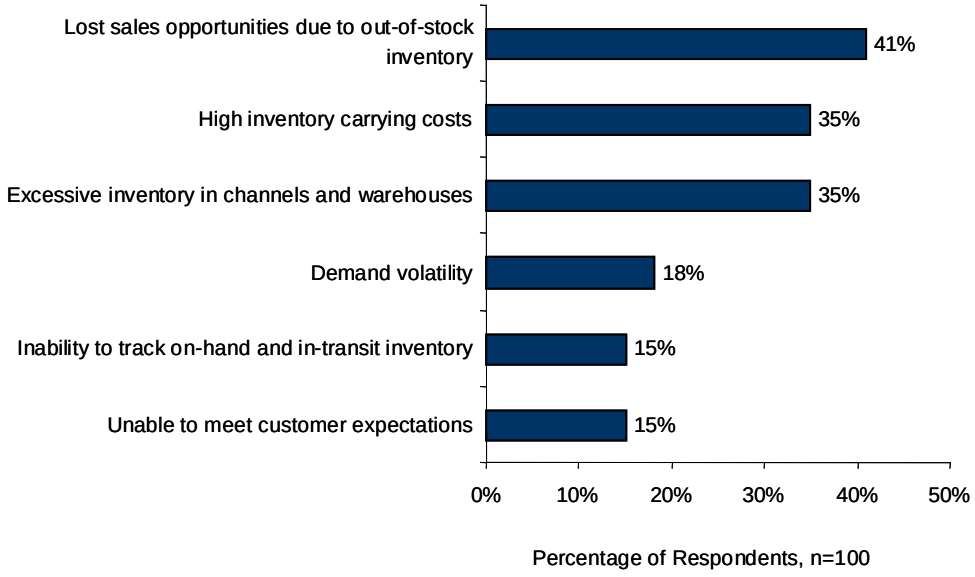
~ Vice President of Distribution and Supply Chain Process Improvement, Large Grocery Retail Chain (Americas)

Top Inventory-Related Business Pressures

Between May and June 2010, Aberdeen surveyed 100 retail enterprises to determine the current state of inventory operations. Our data indicates that

the foremost inventory-related pressure (selected by 41% of responding retailers as their top pressure) is "lost sales opportunities emanating from out-of-stock inventory" in stores and channels (Figure 1). During a revival phase in the retail industry, the out-of-stock pressure is a deeply troubling sign when one considers that the next two pressures are related to "high inventory holding costs" and "excessive inventory in channels and warehouses."

Figure 1: Inventory Pressures



Source: Aberdeen Group, June 2010

The contradiction related to out-of-stock and excessive inventory pressures indicate that retailers are not managing automated replenishment, cycle counts, and inventory accuracy requirements effectively. They also lack adequate visibility towards the flow of high-turn merchandise, which has lead to higher than normal out-of-stock and low service levels on high-turn merchandise. Moreover, higher than normal inventory levels and inventory carrying costs is reflective of too much buffer or safety stock in slow-moving product categories. Lastly, within the top five pressures is demand volatility and inability to track on-hand and in-transit inventory. These pressures further complicate an already delicate inventory and working capital situation for retailers leading to a lower propensity to sell merchandise at the right place and right time, and lower customer satisfaction due to out-of-stocks.

The Maturity Class Framework

Aberdeen used three key performance criteria to distinguish the Best-in-Class from Industry Average and Laggard organizations:

- **On-time order delivery rate** is the percentage of timely inventory orders received by distribution centers for delivery to stores within the last 12 months
- **Inventory turns** is defined as the total number of times a company invested in goods in a year, and is measured in the percentage change compared to the previous 12 months based on pre-determined goals, and calculated as net sales/average inventory
- **Cost of goods sold** is defined as the difference between beginning inventory and ending inventory of the year, and is measured in the percentage change terms compared to the previous 12 months

When looked at as a unified set of performance metrics, these Key Performance Indicators (KPIs) are a basis from which to understand how top performers - the Best-in-Class - are improving or enhancing overall inventory optimization.

Table 1: Top Performers Earn Best-in-Class Status

Definition of Maturity Class	Mean Class Performance
Best-in-Class: **Top 20%** of aggregate performance scorers	▪ Current on-time order delivery rate: 95.3% ▪ Year-over-year increase in inventory turns: 17% ▪ Year-over-year decrease in cost of goods sold: 4%
Industry Average: **Middle 50%** of aggregate performance scorers	▪ Current on-time order delivery rate: 90.3% ▪ Year-over-year increase in inventory turns: 4% ▪ Year-over-year increase in cost of goods sold: 7%
Laggard: **Bottom 30%** of aggregate performance scorers	▪ Current on-time order delivery rate: 87.3% ▪ Year-over-year increase in inventory turns: 1% ▪ Year-over-year increase in cost of goods sold: 22%

Source: Aberdeen Group, June 2010

The Best-in-Class PACE Model

Table 2 shows a roadmap to the key Pressures, Actions, Capabilities, and Enablers (PACE) prioritized by Best-in-Class companies for customer-centric retailing success. This will help identify the key capabilities and enablers that are being considered as part of their inventory optimization initiatives.

Table 2: The Best-in-Class PACE Framework

Pressures	Actions	Capabilities	Enablers
▪ Lost sales opportunities due to out-of-stock inventory	▪ Improve or introduce shelf- or item-level inventory optimization ▪ Improve product replenishment agility in stores/channels	▪ Stores, merchandising, inventory, and logistics departments have access to near real-time shipping and order information. ▪ Unit-level inventory thresholds for automated ordering and replenishment ▪ Ability to track inventory flow requirements at the unit or item-level for optimum inventory levels ▪ Enterprise-wide visibility into unit-level inventory availability ▪ Safety stock requirements in line with channel demand	▪ Bar code asset tracking system ▪ Inventory reporting and record dashboards ▪ Inventory software with web-based databases (web-server based virtual inventory) ▪ Electronic data interchange (EDI) platform ▪ POS data capture application ▪ POS data sharing application ▪ Radio-Frequency Identification (RFID) based inventory tracking system ▪ RFID data integration ▪ Trading partner and vendor portals

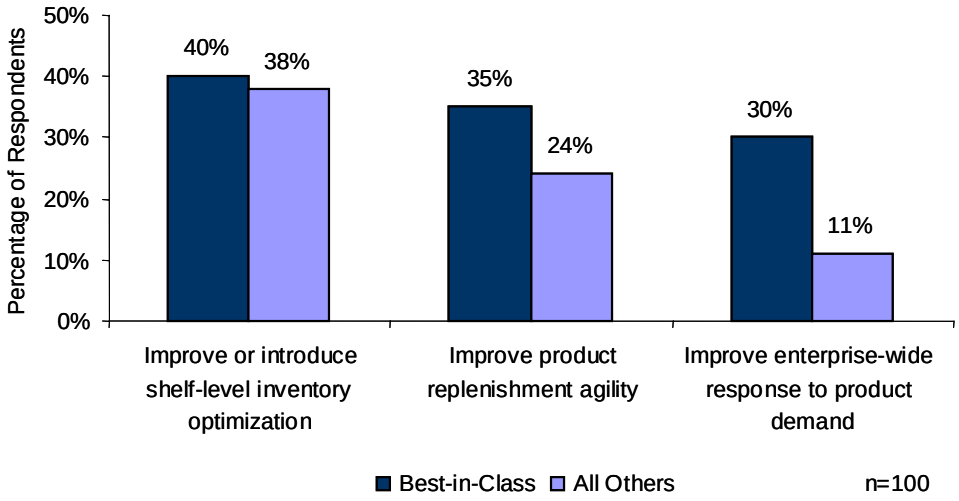
Source: Aberdeen Group, June 2010

Best-in-Class Strategies

According to Aberdeen data, as a response to the business pressures related to topline sales and customer satisfaction losses associated with out-of-stocks, Best-in-Class retailers are focusing on raising the bar in three strategic areas. First, the Best-in-Class are implementing a comprehensive inventory optimization strategy that takes into account shelf or item-level inventory flow that is related to customer purchase behavior (Figure 2). Retailers such as Macy's, Lowe's, and Family Dollar are applying more localized and customer-driven inventory models that strive towards inventory accuracy and visibility down to the store shelf-level.

For retailers, this is a departure from the traditional retail inventory planning that involved high-level category forecasts based on historical sales. The shelf-level focus is a precision-based localized inventory strategy that is more customer demand analytics-driven compared to previous models that relied on sales data. This strategy enables inventory demand and supply alignment. According to our analysis, retailers are taking more of an integrated view of shelf-level product movement in stores that is created by combining analytics related to unit and department-level Point-of-Sale (POS) sales data of individual stores or narrow store clusters, insights from category-level secondary data, and shipment data that relates with individual SKUs.

Figure 2: Shelf-Level Inventory Strategies



Source: Aberdeen Group, June 2010

Secondly, it does not come as a surprise that in order to find the actual in-stock benefits and ROI from shelf-level inventory optimization, more than a third (35%) of Best-in-Class retailers are focused on augmenting product replenishment agility. By implementing more rapid speed-to-shelf programs that enhance inventory visibility and accuracy, Best-in-Class achieve timely automated replenishment and fewer out-of-stocks. Retailers such as Vitamin Shoppe, Dillard's, JCPenney, and Bloomingdales are all finding success through this replenishment agility model that reduces out-of-stock, inventory costs, and increases customer fulfillment across channels. Lastly, Best-in-Class retailers are 2.7 times more likely than all other retailers to increase organization-wide focus on rapid replenishment by providing enterprise-wide inventory visibility and alerts. Best-in-Class retailers also improve enterprise-wide replenishment response by providing flexibility when required such as fulfilling customer demand from any channel. In recent times both Best Buy and Staples have adopted such a strategy and found in-stock related customer satisfaction improvements.

Aberdeen Insights — Strategy

Aberdeen data shows that 53% of Best-in-Class retailers combine item-level data insights with customer behavioral analysis to ensure accurate inventory and localized replenishment planning. Through this customer demand data-driven strategy Best-in-Class retailers are in a position to attain:

- High service levels in stores, channels, and distribution centers
- Less margin of error in setting-up localized inventory plans
- Job-role based inventory accountability for all stakeholders at the store-level, headquarters, and throughout the retail supply chain
- Store/warehouse/headquarter performance management related to inventory costs associated with on-hand and in-transit inventory
- Improved in-stock related customer satisfaction

However, shelf-level inventory planning using customer demand data completes only one part of the inventory optimization puzzle. Best-in-Class retailers need to strive for enabling consistent inventory accuracy during the overall product lifecycle. Moreover, real-time tracking, and visibility strategies must be introduced so that retailers ensure rapid response to replenishment needs at the shelf or item-level.

"Improving product demand-sensing for perpetual inventory re-ordering, and improving shelf-level inventory optimization are our top two inventory strategies currently."

~ Robert Grant, Vice-President, Supply Chain, Swarovski, North America

The next chapter provides details on capabilities and technology tools that support consistent inventory accuracy, tracking, and visibility strategies for rapid replenishment.

Chapter Two: Benchmarking Requirements for Success

Best-in-Class companies are 2.9 times as likely as all others to possess capabilities for accurate inventory and replenishment planning. These companies are also 1.6 times as likely as all others to provide inventory visibility across a single channel or the entire cross-channel retail enterprise. Visibility and tracking capabilities can be developed by using web-based inventory availability and real-time inventory look-up processes, virtualization of inventory data for easier access and updates, and real-time inventory alert tools (supported by item or pallet-level tracking technologies such as radio frequency identification).

These capabilities and tools support minute-to-minute retailer decision-making related to optimizing inventory and agile replenishment programs involving close collaboration between the retail headquarters, retail stores, warehouse and distribution centers, and trading partners. The ultimate goal: improving inventory accuracy, in-stock performance, turns, and customer satisfaction. The following case study of a large apparel retailer signifies the use of item-level RFID to improve inventory operations and its overall significance to the retail business.

Fast Facts

- √ Best-in-Class retailers are 2.9 times as likely as all others to possess capabilities for accurate inventory and replenishment planning
- √ Best-in-Class retailers are, on average, 1.5 times as likely as all others to adopt knowledge management tools for enhancing their near-real and real-time inventory data collection, measurement, and tracking

Case Study — A Large Apparel Retailer

A large apparel and home furnishings retailer operating over 300 stores in North America recently faced inventory inaccuracy challenges related to inventory visibility and accuracy. The challenges were specifically related to the significantly low levels of inventory visibility at the item-level when moved throughout the store. The second related challenge was the inaccuracy of inventory information that impacted decisions related to ordering, allocation, forecasting, and replenishment.

"Both these business challenges led to declining sales and customer satisfaction," according to the Director of Merchandising and Supply Chain Applications. As a result, this retailer commissioned a third-party to conduct an analysis to determine the reasons for the business problem associated with inventory inaccuracy and visibility.

As a result of this analysis, this retailer decided to address its inventory, sales, and customer satisfaction complexities by deploying item-level Radio-Frequency Identification (RFID) using a test set-up concept involving one test store and one control store. The category chosen for the test included denim merchandise and the evaluation time was 10 weeks. As a result of this pilot program, this retailer was able to realize three sets of business benefits.

continued

Case Study — A Large Apparel Retailer

First, this test program resulted in a 96% reduction in cycle count time. This meant that inventory associates were able to execute item-level inventory counts more often during the day to ensure inventory accuracy. Second, inventory accuracy improved by 17% making item-level inventory accuracy more reliable. Third, this entire item-level RFID involving tags, readers, and data measurement, led to overall increase in shrink awareness in the test store identifying when, where, and what was stolen.

The key takeaways from this test were the following:

- Existing inventory management processes must be documented and understood before progressing to a sustainable item level RFID initiative
- Retailers applying unique knowledge of their operation model to item level RFID inventory data will be able to assess, monitor and improve financial performance in new and innovative ways

According to this retailer, the value driven by item-level RFID for inventory accuracy includes the following:

- Provides an order of magnitude improvement in the ability to quickly and accurately count inventory
- Facilitates better inventory management decision making with regular, accurate cycle counting
- Delivers real-time information to help deter internal theft
- Creates visibility into the effectiveness, efficiency and variance associated with inventory handling processes

Competitive Assessment

Aberdeen Group analyzed the aggregated metrics of surveyed companies to determine whether their performance ranked as Best-in-Class, Industry Average, or Laggard. In addition to having common performance levels, each class also shared characteristics in five key categories: (1) **process** (the approaches they take to execute daily operations); (2) **organization** (corporate focus and collaboration among stakeholders); (3) **knowledge management** (contextualizing data and exposing it to key stakeholders); (4) **technology** (the selection of the appropriate tools and the effective deployment of those tools); and (5) **performance management** (the ability of the organization to measure its results to improve its business). These characteristics (identified in Table 3) serve as a guideline for best practices, and correlate directly with Best-in-Class performance across the key metrics.

Table 3: The Competitive Framework

	Best-in-Class	Average	Laggards
Process	Unit-level inventory thresholds for automated ordering and replenishment		
	58%	41%	23%
	Enterprise-wide visibility into unit-level inventory availability		
	53%	44%	32%
Organization	Multi-tier supplier-distribution network		
	42%	31%	23%
Knowledge	Stores, merchandising, inventory, and logistics departments have access to near real-time shipping and order information		
	63%	38%	27%
	Near-real-time polling of POS data for inventory accuracy and replenishment planning		
	53%	31%	18%
	Stores, merchandising, inventory, and logistics departments have access to real-time shipping and order information		
	42%	31%	23%
	Ability to fully track and trace inventory in the supply chain (warehouse, transportation, distribution center) and store-level in near real-time		
	42%	38%	18%
Technology	Applications or platforms that support current retail inventory optimization initiatives:		
	▪ 74% Bar code asset tracking system ▪ 74% Inventory reporting and record dashboards ▪ 74% Electronic data interchange (EDI) platform ▪ 58% POS data capture application ▪ 58% POS data analytics ▪ 58% RF/Wireless Barcode Scanners	▪ 63% Bar code asset tracking system ▪ 47% Inventory reporting and record dashboards ▪ 59% Electronic data interchange (EDI) platform ▪ 47% POS data capture application ▪ 34% POS data analytics ▪ 53% RF /Wireless Barcode Scanners	▪ 27% Bar code asset tracking system ▪ 36% Inventory reporting and record dashboards ▪ 27% Electronic data interchange (EDI) platform ▪ 32% POS data capture application ▪ 27% POS data analytics ▪ 27% RF/Wireless Barcode Scanners
Performance	Near real-time or real-time store/channel daily inventory reports for performance tracking:		
	53%	38%	18%

Source: Aberdeen Group, June 2010

Capabilities and Enablers

Based on the findings of the Competitive Framework and interviews with retailers, the following is a detailed description of the capabilities and technology enablers that support Best-in-Class inventory accuracy, visibility, and tracking for rapid replenishment, low inventory costs, in-stock, and customer satisfaction.

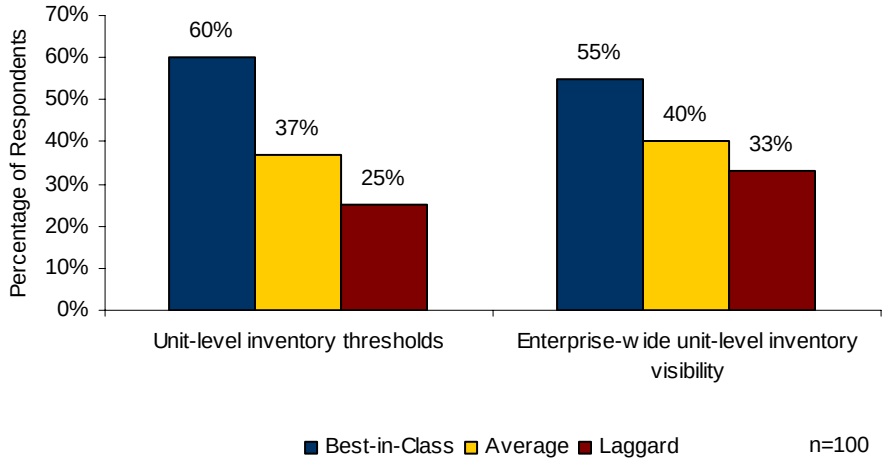
Process

Best-in-Class retailers are outpacing Industry Average and Laggard retailers across multiple process capabilities. However, two critical business process capabilities are highlighted in Figure 3. Aberdeen data indicates that Best-in-Class retailers are taking the leap in managing these shelf-level inventory processes by addressing two primary areas of focus: unit-level item thresholds and enterprise-wide visibility towards SKU-level availability.

Unit-level item thresholds

Best-in-Class retailers are 2.4 times more likely than Laggard retailers to establish unit-level minimum and maximum quantity thresholds based on demand sensing and sales trend data that assists in forecasting and automated replenishment. For instance, if a small-box drug store has less than average levels of days of inventory supply on a certain item that sells rapidly due to a demand shift or causal event, unit-level item thresholds ensure that warehouse teams and suppliers are alerted to comply with shorter lead time for timely in-store replenishment. This helps in controlling out-of-stock opportunity costs for the stores.

Figure 3: Inventory Thresholds and Visibility



Source: Aberdeen Group, June 2010

"We faced a business challenge related to poor in-stock rate (85%) and flat turns at 3.0. We focused on inventory accuracy. We installed a new demand-supply based inventory model that balanced our lost margin with inventory carrying costs to set inventory levels that drive the maximum profit. As a result, our in-stock increased to 97% and strong turn improvement."

~ Richard Tannenbaum, Vice-President Supply Chain and Inventory Operations, The Vitamin Shoppe

Enterprise-wide visibility towards SKU-level availability

Visibility towards active in-store on-hand merchandise and in-active merchandise that has moved in the past seven days is imperative for creating

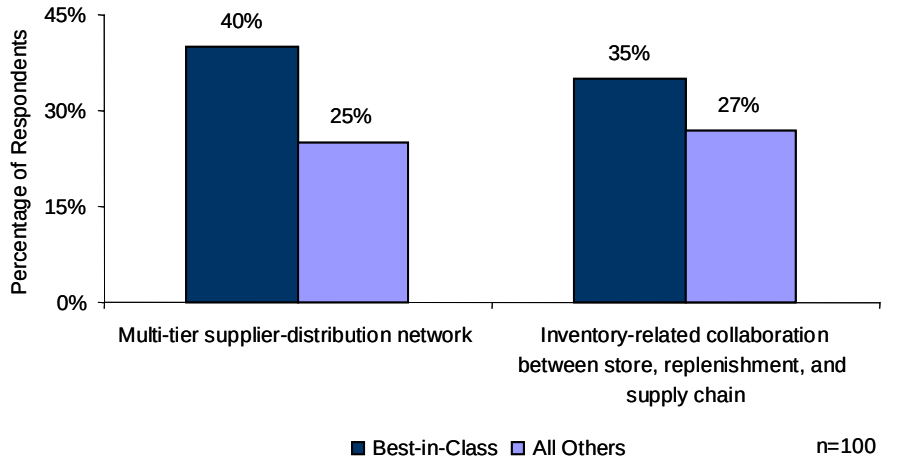
cohesive stores, warehouses, and headquarters departments (supply chain, inventory, distribution, and store operations). Companies can achieve visibility by adopting browser-based inventory management systems or item-level RFID based inventory models that update quantities in real-time and generate summary e-mails or dashboards. Several apparel retailers including Bloomingdales experience inventory visibility success in RFID test pilots and actual closed-loop deployments. Best-in-Class companies are 1.6 times as likely as Laggard retailers to provide inventory visibility across a single channel or the entire multi-channel enterprise. Multi-location and multi-channel web network-based inventory visibility leads to easier inventory data access at any given point in time within the organization. This facilitates service levels, less margin of error in setting-up localized inventory plans, job-role based inventory accountability, and store/warehouse/headquarter performance management.

Organization

Figure 4 shows that Best-in-Class retailers are more likely to build multi-tier, multi-warehouse, and cross-channel retail supply chain strategies to manage the expanding inventory sources and supplier networks. The multi-tier supplier and distribution networks enable better overall control on out-of-stocks and on-time replenishment. Moreover, multi-tier networks require enhanced inventory accuracy, visibility, and traceability requirements for reducing risks associated with timely replenishment and returns or reverse logistics involving a broad set of active, inactive, clearance, and discontinued inventory.

Within multi-tier networks, retailers need to be more cognizant of in-store inventory accuracy tasks such as handling of damaged goods, direct drop shipment from suppliers, returns to vendor, returns to warehouse, and markdown and clearance merchandise stock procedures. There is a need for more automated and real-time business processes to support all inventory events in a multi-tier supply chain and inventory management network.

Figure 4: Best-in-Class Multi-Tier Networks and Collaboration



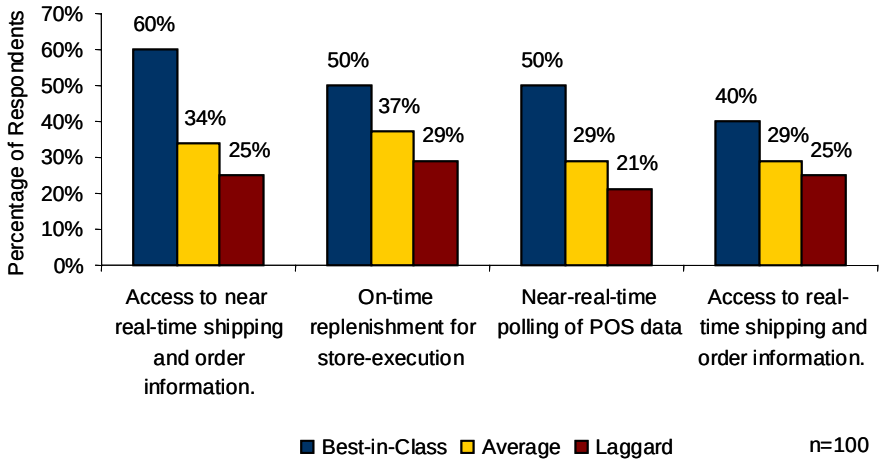
Source: Aberdeen Group, June 2010

Knowledge Management

Currently, a mere 32% of retailers possess capabilities to fully track and trace inventory in the supply chain (warehouse, transportation, distribution center) and store-level in near real-time. Worse still, a mere 23% of retailers possess the same capabilities in real-time. This means that a majority of inventory, supply chain, finance, store operations, and other departments within a retail enterprise access updated inventory data in days and not hours. This hampers service-level agility in stores, warehouses, and the supply chain. However, Best-in-Class retailers are on average 1.5 times as likely as all others to adopt knowledge management tools for enhancing their near-real and real-time inventory data collection, measurement, and tracking. Figure 5 shows that Best-in-Class companies are leading adopters of updated and computerized inventory data records (both real-time and near-real-time). This data enables accurate inventory threshold and safety stock planning, internal visibility, supplier visibility, and traceability requirements for re-allocation, returns, or recalls.

According to Aberdeen's May 2009, *Retail Inventory Optimization* benchmark report, Best-in-Class inventory planning teams are 1.4 times more likely to develop a more holistic approach to channel-level inventory plans based on access to real-time computerized records related to open-to-buy, purchase order, price books, returns, consolidated physical inventory, and supplier files. Besides aiding day-to-day decisions, these records can easily be integrated into business intelligence tools for advanced forecasting and item-level demand trend analysis.

Figure 5: The Importance of Measuring Inventory-Related Data



Source: Aberdeen Group, June 2010

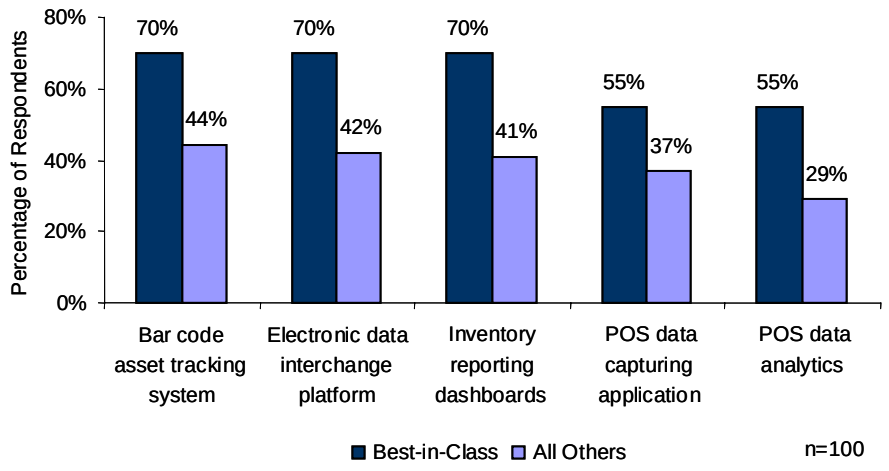
Technology

The applications outlined in Figure 6, Figure 7, and Figure 9 are the most pervasive software and hardware applications that enable inventory accuracy, visibility, tracking, and traceability. It is evident that the landscape for inventory solutions is fragmented and supports several inventory

demand and supply execution-related functions. Ultimately, the ideal combination of tools that a retailer adopts depends on the retail format, market differentiation strategy, number of SKUs, maturity of retail supply chain and IT model, and the type of merchandise sets. The key to effective inventory operations is linkages and standards-based integration between the different inventory planning and execution models. The standard workflows are transforming every day due to uncertain market conditions and growth in cross-channel supply chains.

Best-in-Class retailers use the right mix of business processes, enforce inventory compliance requirements in the channels and supply chain, and undertake event-based flexibility for optimizing inventory across all channels. The Best-in-Class enablers outlined below can drive lower inventory costs, better item-level accuracy, timely replenishment, and as a result, higher inventory-related customer satisfaction.

Figure 6: Top Currently Used Enablers that Support Inventory Operations



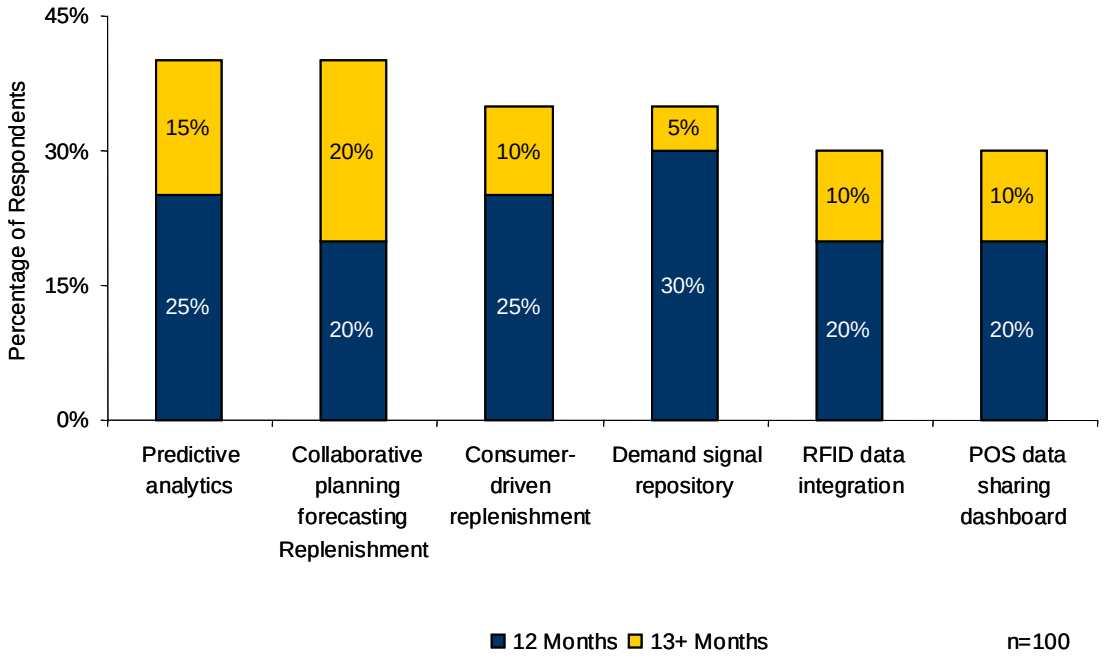
Source: Aberdeen Group, June 2010

According to the data in Figure 6, Best-in-Class retailers are on-average 1.6 times as likely as all others to use standard bar code asset tracking systems for tracking unit-level product flow, Electronic Data Interchange (EDI) platforms for increased business-to-business transaction connectivity with suppliers, and inventory reporting dashboards for updated inventory performance analysis by department and category. All these tools support inventory visibility, tracking, and traceability processes. The Best-in-Class are also more likely to use POS data capture and POS analytics for improving inventory demand sensing and plan appropriate response to demand from a buying, sourcing, and supply chain planning standpoint.

In addition to applications currently in use, Best-in-Class retailers are also planning to use a combination of tools that can eliminate inventory inaccuracies and visibility-related complexities in the warehouse and channels. The top six planned technologies that are likely to support Best-

in-Class inventory initiatives within the next 12 months and beyond are outlined in Figure 7.

Figure 7: Top Planned Enablers



Source: Aberdeen Group, June 2010

Notably, unlike last year's inventory survey, RFID data integration emerges as one of the top enablers for a fifth of retailers (Figure 7). As shown in this report through case studies, this enabler is directly impacting inventory performance areas such as accuracy and cycle count time reduction. RFID data integration into inventory processes can facilitate streamlining of real-time inventory data accuracy, simplifying inventory compliance processes such as cycle counts, and even inventory shrink reduction due to theft, damage, or other losses that are common in retail.

As in the case of several top apparel retailers including Dillard's, JC Penney, Marks & Spencer, and Bloomingdales, item-level tagging and the resultant RFID data integration can be unveiled in closed-loop formats and test categories to ascertain ROI and then expanded to other categories for scalable results. As noted in Figure 9 (in the Aberdeen Insights section at the end of this chapter) about a fourth (24%) of retailers indicate at least some use of RFID with EPC or EPICS standards.

Is There An Ideal Inventory Technology Strategy?

The make-up of inventory solutions in retail needs to be looked at from two lenses. Firstly, there are systems that are primary to shelf-level inventory planning and execution. Inventory forecasting, order management systems, consumer-driven replenishment, and reporting tools are the

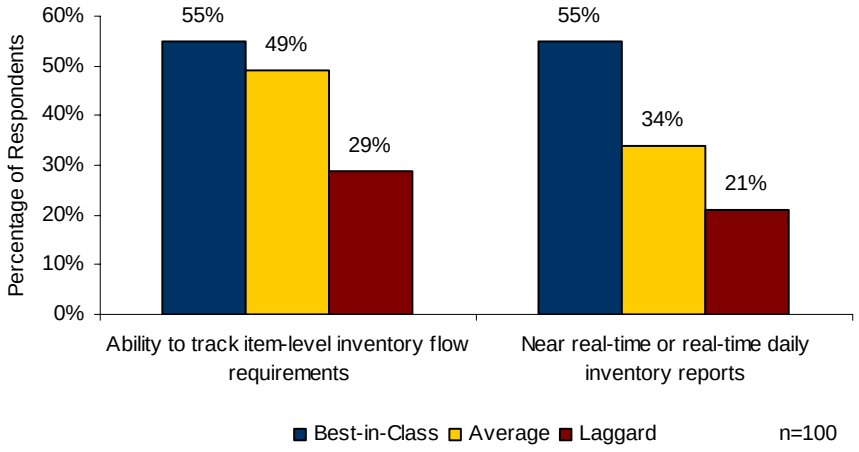
primary systems/tools that are directly related to the core inventory functions such as forecasting, planning, demand-driven replenishment, inventory data analysis and reporting.

Secondly, associated collaborative approaches for shelf-level inventory optimization include Vendor Managed Inventory (VMI) and Collaborative Planning Forecasting Replenishment System (CPFR), and RFID-based approaches. All these approaches are focused on inventory accuracy, visibility, and better supply chain integration. CPFR and VMI have been adopted in the last decade or so and continue to see increased adoption amongst retailers since perpetual inventory costs had to be distributed and curtailed within a multi-tier and multi-location retail supply chain environment. RFID has started to gain traction in spurts amongst apparel and other retail segments primarily due to the recent ROI success of several top tier retail brands.

Performance Management

According to Aberdeen data, Best-in-Class retailers are more likely to have access to item-level inventory performance results that can enable better inventory demand-supply network adjustments, risk management, and event-level flexibility for improved on-shelf accuracy and in-stock. Greater adoption of BI tools that support inventory data collection, analysis, reporting, and dashboarding can enable inventory performance management enterprise-wide. The access to item-level data and reporting is critical for headquarters and field executives for consistent and optimum buying, merchandising, and channel allocation.

Figure 8: Item-Level Inventory Reports



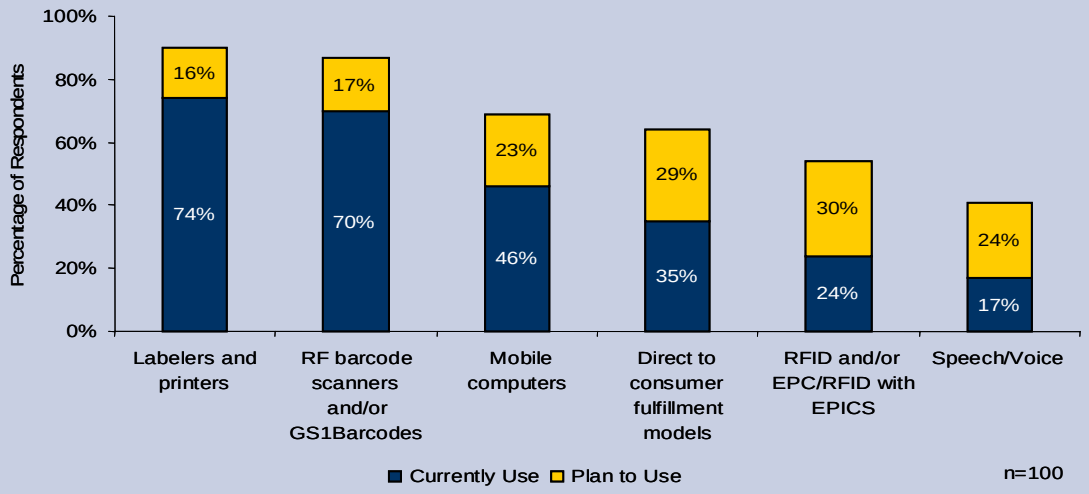
Source: Aberdeen Group, June 2010

Aberdeen Insights — Support Enablers for Inventory Management

The current adoption data from Aberdeen's April, 2010 *State of Retail Logistics* study shows that the top three support enablers include labelers and printers, RF/Wireless barcode scanners, and mobile handheld computers. All three of these support enablers enable scanning and tracking of inventory in the warehouse and stores. Best-in-Class retailers are more likely to use all the enablers shown in Figure 9 for inventory and supply chain execution compared to Industry Average and Laggard retailers.

The support enablers are experiencing rapid advancement in terms of integrated warehouse pick, pack, and ship processes, voice integration, store receiving, reverse logistics, and direct-to-customer fulfillment. For example, mobile computers and speech/voice technology are two enablers which allow dynamic picking on a task in real-time. These two technologies in particular are being used by Best-in-Class companies in conjunction with labor management systems to increase labor productivity in the retail supply chain.

Figure 9: Top Currently Used Support Enablers



Source: Aberdeen Group, April 2010

Chapter Three: Required Actions

Whether a company is trying to move its performance in customer-centric retailing 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

- **Implement a POS data polling and analysis strategy for ascertaining inventory demand**. Currently, 82% of Laggard retailers lack the ability to do overnight or trickle polling of POS data for conducting detailed inventory demand trend analysis. In order to become Best-in-Class, Laggards must develop the capability to seamlessly integrate product demand signal data with open to buy requirements, inventory forecasts, and logistics operations. This capability ensures that Laggards can take near-real time decisions, balance inventory requirements across channels, as well as reduce supply chain risks. Best-in-Class companies must integrate demand signals, labor management, and replenishment needs so they do not face the burden of figuring out re-allocation of channel inventory which ultimately enhances the ability to increase inventory turns and working capital optimization. These companies can start by establishing a central POS data repository that can send SKU-level demand data updates, forecast variations, and real-time alerts for the reporting structure that manages day-to-day inventory and supply chain execution.
- **Process store/channel daily inventory reports for performance tracking**. Eighty-two percent (82%) of Laggard organizations do not use capabilities that provide daily inventory reports to stores and channels so they can manage their inventory cycle counts, overall inventory accuracy, returns, and shrink-related costs. Greater adoption of BI tools and compliance mandates that support store and unit-level inventory data collection, analysis, reporting, and dashboarding can enable inventory performance management in stores and channels. The access to item-level data and reporting is equally critical for headquarters and field executives for consistent service levels and inventory accuracy.

Industry Average Steps to Success

- **Adopt unit-level inventory thresholds for automated ordering and replenishment.** Seventy-seven percent (77%) of Industry Average retailers lack unit-level thresholds for rapid replenishment of inventory levels that can generate new orders for fast-turning items through the analysis of sell-through rates and recurring demand. Proper analysis examines short term demand

Fast Facts

√ Currently, 82% of Laggard retailers lack the ability to do overnight or trickle polling of POS data for conducting detailed inventory demand trend analysis

√ Only 23% of Industry Average retailers use unit-level thresholds for rapid replenishment of inventory levels that can generate new orders for fast-turning items through analysis of sell-through rates and recurring demand

√ Fifty-three percent (53%) of Best-in-Class organizations are using enterprise-wide visibility tools into unit-level inventory availability both upstream and downstream in the supply chain

data rather than historical data. When the inventory level reaches the predetermined level, a new order needs to be generated. Companies need to adopt inventory system triggers that can send an alert to the supply chain stakeholders when a new shipment needs to be ordered. Item-level tagging in key selling categories can also help unleash a rapid replenishment trigger. The manual process of checking inventory stock levels and replenishment schedules is a virtual impossibility when several thousand units are involved. Currently, Best-in-Class companies are 1.5 times as likely as Laggard companies to effectively set these thresholds.

- **Provide access to real-time inventory, shipping, and order information and alerts to merchandising, inventory, stores and logistics teams.** Sixty-nine percent (69%) of Industry Average retailers do not provide open and automated access to all the inventory and supply chain-related stakeholders in the headquarters and the field. If a retailer is even a day or two late in discovering that replenishment or recall for an item or a group of items (promotional or non-promotional items) is necessary, it can slow down the process by a week or more depending on supplier availability and shipping capabilities. Internal collaboration within a retail organization will help to ensure that proper unit-level demand and replenishment schedules are being shared with all concerned. Externally, if agreed upon earlier as part of the collaborative effort, the supplier should have visibility into the inventory levels to generate a new order even if the retailer does not initiate the re-order due to a lapse in the process. At the same time, the retailer needs to ensure that proper inventory replenishment thresholds are established, adhered to, and shared with the supplier.

"In our evolution to a more consumer-
driven organization, our goal is to deliver a differentiated experience for our customers without incurring the incremental costs required to do this. As we 'localize' our assortments it is critical that we maintain the low cost leadership position we have enjoyed over the past 50 years. Effectively managing the trade-off between assortment differentiation and supply chain costs is core to our mission of being a value retailer."

~ Scott Zucker, Vice-President of Information Technology, Family Dollar

Best-in-Class Steps to Success

- **Increase enterprise-wide visibility into unit-level inventory availability**. Currently, 47% of Best-in-Class retailers are not using enterprise-wide visibility tools into unit-level inventory availability both upstream and downstream. Visibility and responsiveness have become the necessary ingredients for success in today's multi-tiered demand-supply networks in retail. Best-in-Class companies are able to achieve the level of responsiveness needed to manage supply chain disruptions and risks, such as the recent credit squeeze that impacted 75% of retailers, according to Aberdeen's *2008 State of the Retail Market* report. More Best-in-Class retailers must focus on multi-user multi-warehouse inventory flow processes and enablers in the areas of in-bound product flow visibility for all internal and external extended supply chain stakeholders who are involved in ensuring that products reach the right place at the right time, whether it is the retailer's DC or store. EDI platforms, virtualized inventory, and vendor portals can support the inventory visibility objectives of Best-in-Class retailers.

- **Enhance the ability to fully track and trace inventory in the supply chain (warehouse, transportation, distribution center) and store-level in near real-time**. Currently, 58% of Best-in-Class retailers lack inventory tracking and traceability tools for inventory flow in the supply chain. Legacy inventory modules prevent the ability to view product flow from warehouse to the store and back. Best-in-Class retailers should consider additional upgrades to add barcode tracking and traceability, as well as unit-level RFID-supported inventory data updates for key selling and promotional categories. This will enable higher inventory accuracy, and easier process products recalls, and lower shrink due to inventory not found in stores and warehouses.
- **Analyze procurement, carrying, and out-of-stock costs in near real-time.** Consumer demand will change due to seasonal needs, economic turbulence, competitive pricing strategies, and other assorted reasons. Without proper analysis, inventory levels run the risk of significant over-stocks or under-stocks. Delays in reporting procurement costs, carrying costs, and out-of-stock costs will have a significant impact on inventory planning for the retailer, as inventory holding costs will not be accurate. Sixty percent (60%) of Best-in-Class retailers have not made the transition to real-time reporting on inventory costs. By moving to real time or near-real time reporting on inventory costs, retailers will have a better view into the supply chain and will be able to better prepare for fluctuations in consumer demand without overspending on inventory or cutting themselves short.

Aberdeen Insights — Summary

Shelf-level inventory effectiveness depends a great deal on the type and structure of inventory processes in the field, headquarters, and the larger supply chain. The reasons for the higher inventory in-stock, inventory accuracy, and low inventory holding costs performance is due to better mapping of inventory movement across major departments and teams. Best-in-Class companies also adopt improved visibility of inventory-related decisions (e.g. order management), tighter controls on safety stock requirements, inventory thresholds, and centralized decision-making on buying and procurement decisions. The inventory accuracy risk is high in the case of retailers that own perpetual inventory systems. These retailers place more responsibility on store locations to manage some or all parts of the inventory unit-level execution and adjustments-related decisions (e.g. balancing the overstating and understating of inventory). In such a situation, finding the right balance between open-ended inventory operations process compliance, shared accountability for all departments, and inventory performance management through proper and timely reporting is paramount.

Telephone: 617 854 5200
Fax: 617 723 7897

Appendix A: Research Methodology

Between May and June 2010, Aberdeen examined the use, the experiences, and the intentions of more than 100 diverse set of retail enterprises. inventory management in retail can defined as the continued cycle of organizing and managing a list of finished goods. The inventory process comprises of timely replenishment and distribution of finished goods for sales in retail channels based on seasonal and non-seasonal demand.

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

Responding enterprises included the following:

- *Job title:* The research sample included respondents with the following job titles: Senior Management (16%); EVP / SVP / VP (15%); Director (21%); Manager (28%); Consultant (14%); and Other (6%).
- *Department / function:* The research sample included respondents from the following departments or functions: Logistics / Supply chain (40%); sales and marketing staff (16%); operations (5%); IT manager or staff (12%); corporate management (8%); customer service (4%); Finance (3%); and Other (12%).
- *Industry:* The research sample included respondents exclusively from retail industries, with the following segments: Specialty (16%); Supermarket / Grocery (18%); Apparel / Fashion (14%); Consumer Electronics (15%); Consumer Products (16%); Food and Beverage (11%); and Others (10%).
- *Geography:* The majority of respondents (65%) were from North America. Remaining respondents were from the EMEA region (22%) and Asia-Pacific region (13%).
- *Company size:* Thirty-two percent (32%) 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 31% of respondents were from small businesses (annual revenues of $50 million or less).
- *Headcount:* Forty-nine percent (49%) of respondents were from large enterprises (headcount greater than 1,000 employees); 24% were from midsize enterprises (headcount between 100 and 999 employees); and 27% of respondents were from small businesses (headcount between 1 and 99 employees).

Study Focus

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

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

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

Table 4: The PACE Framework Key

Overview
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: **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) **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) **Capabilities —** the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing) **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)

Source: Aberdeen Group, June 2010

Table 5: The Competitive Framework Key

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

Source: Aberdeen Group, June 2010

Table 6: The Relationship Between PACE and the Competitive Framework

PACE and the Competitive Framework – How They Interact
Aberdeen research indicates that companies that identify the most influential 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.

Source: Aberdeen Group, June 2010

Telephone: 617 854 5200
Fax: 617 723 7897

Appendix B: Related Aberdeen Research

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

- *State of Retail Logistics: Strengthening Cross-Channel Supply Chain Execution*; April 2010
- *Labor Management: Instill Accuracy, Efficiency, and Productivity in the Warehouse and Retail Store*, March 2010
- *On-Time and Under Budget: Maximizing Profits with Efficient Warehouse Management*; December 2009
- *Supply Chain Visibility Excellence: Reduce Pipeline Inventory and Landed Cost*, December 2009
- *Integrated Transportation Management: Improve Responsiveness with Real-Time Control of Execution;* October 2009
- *The 21st Century Retail Supply Chain: Three Key Imperatives*; Sep 2009
- *Warehouse Operations: Increase Responsiveness through Automation*; July 2009
- *Inventory Optimization: Retail Strategies to Eliminate Retail Stock-Out and Over-Stock*; May 2009
- *Integrated Demand-Supply Networks: Five Steps to Gaining Visibility and Control*; March 2009
- *Process Collaboration in Multi-Enterprise Supply Chains*; August 2008
- *Technology Strategies for Multi-Channel Integration*; April 2008

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

Author: Sahir Anand, Research Director, Retail, Hospitality, and Retail Banking (sahir.anand@aberdeen.com)

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4R Systems is a leading provider of advanced inventory and supply chain solutions, which help retailers significantly increase profits by optimizing their inventory and related supply chain decisions. Founded by supply chain experts from Wharton and Harvard Business Schools, 4R solutions profit optimize the matching of supply with demand. From initial launch through replenishment and to end-of-life - for both basic and fashion items - 4R provides retailers such as Family Dollar Stores, Crate and Barrel and The Vitamin Shoppe with solutions that fit their business and drive increases in profitability of hundreds of basis points.

For additional information on 4R Systems:

801 Cassatt Road

Berwyn, PA 19312

Phone: 610.644.1234

www.4rsystems.com

info@4rsystems.com

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For additional information on Avery Dennison:

7 Bishop Street

Framingham, MA 01702-8366

Phone: 508.383.3250

Fax: 508.383.3809

www.ibmd.averydennison.com

mark.odonoghue@averydennison.com

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For additional information on Psion Teklogix:

3000 Kustom Drive

Hebron, KY 41048

Phone: 800.322.3437

www.psionteklogix.com

americas@psionteklogix.com

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6600 Congress Ave.

Boca Raton, FL 33487

Phone: 561.912.6000

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