EAS Study: Shrink Reduced with Minimal Cost

IDC RETAIL INSIGHTS OPINION

Retail shoplifting and resultant shrink continue to threaten retail performance. Good process control and the vigilant application of tools that help deter, identify, and stop crime before it impacts the bottom line continue to be effective means of control.

In 2012, IDC Retail Insights worked with Tyco Retail Solutions to test and assess the impacts of electronic article surveillance (EAS) on a major U.S. grocery retailer's operations. The program demonstrated that EAS technology continues to be a vital shrink-reducing tool. Our test demonstrated that EAS technology:

● Reduces shrink with minimal process changes and limited resource requirements

● Easily pays for itself even with limited SKU tagging (In the test conducted, tagged merchandise consisted only a small percentage of all potential goods sold through stores.)

Additionally, IDC Retail Insights believes that performance improvements can be even more significant with increased tagging levels across other targeted departments. Retailers continue to invest in EAS to control shoplifting, even as they test and implement additional technologies such as RFID and video analytics.

IN THIS WHITE PAPER

In this white paper, IDC Retail Insights shares the results of Tyco Retail Solutions'/large U.S. grocery retailer's 2012 impact analysis of the application of EAS technology on shrink as a result of shoplifting. IDC Retail Insights worked with the retailer's loss prevention (LP) and information technology team as well as Tyco's EAS experts to establish the test program methodology for all data and return on investment (ROI) analysis.

The test ultimately evaluated the impact of Sensormatic acousto-magnetic (AM) EAS technology applied in four test stores versus four equivalent control stores for two key categories: general merchandise (GM) and health and beauty care (HBC), excluding pharmacy. The study commenced in April 2012 and was bounded by an inventory on either side of the six-month test period.

Several different ROI analysis methods were applied, but the method ultimately used by this retailer normalized the data for variations in the number of days in the test inventory cycle for each store, variations that occur in back-to-back inventory cycles, and variations that occur based on format and sales volume. Key findings include:

- Annual benefits per test store showed a 79-basis-point reduction in shrink to EAS-protected product categories including GM and HBC compared with control store net changes over the same period of time.

- Full project payback was achieved in less than 12 months.

Final conclusions from the test retailer's perspective reinforce that EAS technology continues to be a critically impactful tool for controlling shrink and detouring shoplifting. Retailers, more generally, continue to invest in EAS technology as part of a well-managed and well-executed loss prevention plan.

Annual benefits per test store showed a 79-basis-point reduction in shrink to EAS-protected product categories including general merchandise and drug.

STRATEGIC OBJECTIVES AND METHODOLOGY

EAS Project Objectives

- Measure and evaluate shrink in selected departments

- Analyze business case for EAS at a leading grocery retailer

- Forecast ROI for EAS at a leading grocery retailer in select categories

Key Expected Outcomes

● Reduced direct shrink on tagged items and tagged item subdepartments

● Reduced shrink across other retail departments (due to the EAS presence/deterrence factor)

Methodology

● **Project dates.** The six-month study took place between April 2012 and November 2012.

● **How was shrink measured?** Shrink performance was measured for a six-month test period compared with shrink in two prior six-month inventory cycles. This approach ensured that seasonality and other factors were accounted for. The number of days between counts varied, but this variation was accounted for in our ROI analysis.

● **Test and control stores.** There were four test stores and four equivalent control stores.

● **How was ROI calculated?** ROI is based on the difference between the average shrink reduction for test stores minus the average shrink reduction for control stores. This is based on the average shrink for each store (in the test period) compared with the average of the two previous inventory cycles. The ROI scenarios are examined in depth later in this document.

SITUATION OVERVIEW

Shrink Trends/Loss Reduction Strategies

Shoplifting, check and gift card fraud, employee theft, vendor fraud, and organized crime remain the greatest sources of annual losses for food retailers. Year to year, the actual shrink percentage of sales varies, but on average, food retailers report about 2.0% of sales lost due to shrink on an annualized value. (Shrink percentage is based on 2007–2011 grocery shrink data as reported by the Food Marketing Institute [FMI] and Global Retail Theft Barometer.) Shrink percentages vary by product category and company size. Moreover, the Food Marketing Institute has reported that excluding perishable categories, which are subject to loss due to spoilage, some of the most significant losses are found in general merchandise, health and beauty care, and liquors.

According to FMI, retailers with sales greater than $3 billion per year have lower shrink rates attributable to better process controls and better operational and accounting processes. That said, in many cases, larger companies make much more significant investments in loss prevention resources that include human resources (management and field LP teams), training, and technology. Technologies leveraged include the following:

● Video surveillance

● EAS/RFID/sensor systems with a variety of specialized tag types

● Analytics and exception reporting

● Collaborative data sharing

● Check authorization systems

● Biometrics

● Access control and intrusion systems

Astounding statistics from the National Association for Shoplifting Prevention (NASP) make the need for technology investment readily apparent:

● Shoplifters are caught 1 in 48 times they steal, and shoplifting is often not premeditated (73% of adults and 72% of juveniles didn't plan to shoplift). Shoplifting has become one of the most prevalent crimes in the United States, averaging about 550,000 incidents per day, resulting in more than $13 billion worth of goods being stolen from retailers each year (>$35 million in losses per day).

● The advent of organized retail crime (ORC) is also a major contributor to shoplifting in the grocery sector. ORC-based crimes are well planned and typically represent much larger dollar losses per incident. According to the *National Retail Federation (NRF) 2012 Organized Retail Crime Survey,* ORC groups targeting grocery and drug stores quickly grab infant formula, over-the-counter drugs, razor blades, and other high-end health and beauty products.

It is IDC Retail Insights' belief that technology alone is not the solution. Retailers need to employ multilayered loss prevention strategies that combine applied technologies, process control, compliance audits, training, and onsite associate process improvement strategies.

TEST PROCESS AND RESULTS

Every retailer reports shrink, but not every retailer can account for the sources of shrink, and we are all familiar with the adage "you can't manage what you don't measure." Many retailers struggle to actually measure the real impact of loss prevention measures applied — thus the motivation to complete this study. For the purposes of this study, we are evaluating the measurable impact on shrink that occurs as a result of implementing Sensormatic AM EAS technology.

This study compared shrink, sales, and associated metrics in test versus control stores and also compared sales/shrink for the prior two inventory cycles (approximately one year) in order to factor in seasonality and swings that sometimes occur from inventory cycle to inventory cycle as a result of lost or found goods. To ensure proper test structure and to enable results to be leveraged as a general sales tool, IDC Retail Insights provided the following support:

● Developed a test structure to ensure statistic validity

● Oversaw the test

● Conducted the analysis

● Prepared the associated reports and presentations

Test Process Setup

Eight representative stores — four test stores and four control stores — were selected based on overall similarities. The selection process factored store-level sales, shrink, inventory schedule, and format. For the study, Tyco installed its Sensormatic brand AM EAS anti-shoplifting technology in four stores and provided a field service representative to visit the stores on a regular basis to ensure the test was proceeding as planned, conduct audits, and gather feedback. Regularly scheduled inventories at the beginning and end of the test would be the source of actual inventory counts and shrink percentage, shrink dollar, and sales data. The study setup included the following steps:

● **Store selection.** Test stores and control stores with similar shrink profiles in test categories were selected (four test stores and four control stores).

- **Item selection.** For this test, theft-prone SKUs from general merchandise and non-pharmacy health and beauty care were tagged with AM EAS labels. Selected categories of goods included:

  - Antacids

  - Dietary aids and liquid nutrition

  - Eye and ear care

  - Feminine hygiene

  - Hair care

  - Hand, body, and facial

  - Laxatives

  - Men's grooming

  - Oral hygiene

  - Personal care appliances

  - Sinus and allergy

  - Smoking cessation

  - Vitamins

- **EAS tagging.** The majority of items were tagged at source, or in DC, as appropriate. A small number of additional SKUs were tagged in-store.

- **EAS system implementation.** Tyco orchestrated the shipment and installation of AM EAS equipment. A full list of the technology employed is provided in the Appendix section.

- **Physical observations, interviews, and audits.** Tyco field staff conducted periodic observations at stores and submitted comments citing anything that puts the study at risk or impacts EAS performance, including the following:

  - Onsite observations of associate adherence to policy

  - Onsite observations of training or retraining needs

  - Onsite equipment performance

- **Loss prevention program management.** Store associates diligently performed normal loss prevention tasks, ensuring proper equipment operation, deactivating labels at the point of sale, responding to system alarms at the exit, and gathering pertinent data on alarm conditions. Associates provided onsite reports of successes and challenges and gathered data not available electronically.

- **Core data requirement definition and collection.** We collected baseline and periodic data to perform our analysis. All of the following data was sourced from the retailer directly:

  ○ **Baseline data.** We gathered baseline data at several levels: company, store (for each of the four test stores and four control stores), test departments, test categories, and test items. The data included revenue/sales, gross margin, on-hand inventory, inventory turns, inventory adjustments, lost sales, and recognized shrink YTD and for the past two full calendar years.

  ○ **Periodic data.** We gathered periodic data (close of each period April to November) at several levels: company, store (four test stores and four control stores), test departments, test categories, and test items. The required data included revenue/sales, gross margin, on-hand inventory, inventory turns, inventory adjustments, lost sales, and recognized shrink for each period of the study.

  ○ **Inventory data.** Inventory counts were conducted at the start (April) and endpoint (end of November) of the inventory cycle for each store in the study (these periods varied by store).

How Did We Measure Shrink and Calculate ROI?

Our study spanned a six-month period starting in April 2012 and culminating in November 2012. Shrink performance was determined by evaluating the shrink that occurred between two inventory counts in the test and control stores — one in early 2012 and one in the fall. The number of days between counts varied, but this variation was accounted for in our ROI analysis. Definitions for our analysis included:

- **Shrink.** Net unaccounted inventory change (+/-) percentage and dollar at item, department, and store levels at test and control stores for the six-month test period and two previous inventory cycles; measured at various levels including all test stores and all control stores and each store compared with its own previous performance

- **Halo effect.** The potential change in shrink for untagged items caused by EAS tagging of a separate subset of goods

Return on Investment

Return on investment was calculated to demonstrate the shrink that occurred between biannual inventory cycles normalized for the impact of variations in inventory cycles and sales and inventory levels. The components of the calculations are consistent, as follows:

- **Costs** include all operating and capital costs.

- **Capital costs** include install, hardware, and software costs.

- **Operating costs** include system maintenance, labor, and tag costs.

- **Benefits** include actual benefits at test versus control stores and extended across the retail organization.

- **ROI** is calculated on actual test results at test stores only (based on test versus control stores' shrink performance over a six-month test period) and normalized to smooth the impact of uncontrollable variables. EAS impact is evaluated for test stores. This is simple math based on actual results and based on the difference between average shrink dollars at four test stores compared with four control stores (compare average of two previous inventory cycles with test period cycle). The ROI is calculated for test stores only and is fully normalized, accounting for variations in inventory cycles. This is based on the difference between the average shrink at four test stores compared with four control sites (see Table 1).

TABLE 1	
Shrinkage Results: Total Drug and GM Departments	
	Change in Shrink Basis Points: Test Versus Two Prior Periods
Test stores (normalized average)	-86
Control stores (normalized average)	-7
Difference (test versus control)	-79

Source: IDC Retail Insights, 2013

Notes:

- Inventory cycles as defined by this retailer are not always precisely six-month cycles.

- Baseline data from calendar year 2011 was utilized throughout our analysis.

Measurable Test Store Shrink Improvements

In our study, EAS had a definitive positive return on investment in the categories evaluated. Annualized average net shrink benefit per test store showed a 79-basis-point improvement over the control stores. Payback occurs in the 12th month after implementation, netting the company a positive return in year one.

Other EAS Considerations Based on Industry Best Practices

● **Operational excellence is an important element in deploying any retail technology.** The retailer under analysis in this study demonstrated that it had successfully reduced shrink over the past couple of years by applying process improvements. These process improvements span suppliers, distribution centers, and stores and require management and monitoring. We found that implementation of AM EAS technology further reduced shrink in targeted departments. Positive results were likely enhanced by store LP and store operating staff that was attentive, well trained, and effective.

● **Tagged product set was relatively small.** Only a small percentage of total SKUs in test stores were EAS tagged for the duration of the test. This is largely due to the nature of grocery retailers in general, as shrink due to theft is attributed to specific product categories (versus retail verticals like apparel or department stores, which experience theft across virtually the entire store assortment). In addition, the retailer engaged in this study normally tags more items than experienced in these test stores. Thus IDC Retail Insights believes that increasing the range of products and departments protected with EAS would further increase value and ROI. Products tagged for the test demonstrated a marked improvement to their entire departments; therefore, the retailer should benefit from tagging additional departments such as meats, alcoholic beverages, electronics, media, and infant formula, as deployed in many of its other stores with EAS.

FUTURE OUTLOOK

Driving Performance and Productivity with EAS Systems

Benefits of EAS

The results speak for themselves. Millions of dollars per year are at stake and are entirely within reach, with few business process changes and minimal levels of engagement from store resources. Business impacts go beyond reduced loss. While that is all we focused on in our study, IDC Retail Insights believes that it can be demonstrated that out of stocks (OOS) can also be reduced when shrink is accounted for and addressed in a timely fashion. This significantly changes customer satisfaction by enabling customers to find the products they want to buy, when they want to buy them. Customer satisfaction, in-stock performance, and customer loyalty go hand in hand these days, as there are simply too many other places shoppers can go to find the products they want.

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IDC Retail Insights concludes that some of the benefits of EAS implementations include the following direct and indirect measures:

- Reduced shrink on EAS-tagged items and an associated strong "halo" effect to other items within the same department

- Deterrent factor: Halo impact to all items simply because of the presence of EAS equipment

- Inventory reductions as a result of better managed inventory and confidence of in-stock performance

- Improved service levels as a result of reduced OOS and shrink

- Improved customer satisfaction and loyalty

- Improved in-store safety: A security system that makes the store environment more inviting

EAS is a component of building transparency and sharing responsibility for loss prevention. This trusted relationship is necessary going forward — partner with customers and employees to be successful.

A Few More Words About Getting Better Return on Inventory

Return on inventory has become a universal concern for retail executives as market expectations have become much more stringent. Old targets were not aggressive enough, and as a result, retailers will create much more efficient organizational structures and processes. Technology investments will be required to meet new performance expectations, and retailers will be held accountable for achieving the benefits that aggressive investments promise.

EAS and other sensor technologies will help retailers keep better track of what they actually own at any moment in time, while integrated enterprise inventory visibility will enable retailers to sell what they have, marking down less and selling more at full margin. At the same time, analytics and "Big Data" will help retailers plan for and execute to customer expectations better. In aisle, video analytics will help measure customer response to inventory and further manage shelf stock levels.

Calculating and Maximizing Return on Investment of EAS

In this study, we have demonstrated one method to calculate ROI on EAS investments. When making your decision about which methodology to apply to your business, try to eliminate as many of the factors possible that might skew the data. Shrink percentage and percentage points are the most valuable metrics since they already smooth the impacts of store to store sales, inventory, and shrink variability. Cyclic changes period to period and year to year must be accounted for when making any calculations.

Maximize return on investment of EAS technology by:

- Actively leveraging EAS tools (the more the tools are used, the better the results) and harnessing and extending the value of EAS by utilizing EAS intelligence and analytics

- Evaluating ways to use EAS to thwart the professional thieves who may think they know how to beat the system

- Layering loss prevention and inventory management technologies and pairing EAS with video-based store analytics for greater impact

- Tailoring action plans that fit each store's unique LP issues (i.e., focus on external, internal, and operational/process shrink issues)

- Monitoring and sharing LP results with multiple layers/functional groups within the organization (Higher levels of involvement and transparency will net better process compliance and end results.)

- Evaluating new underlying technologies like RFID to better actively and automatically manage inventory in real time (Item-level RFID tracking opens companies to a whole new level of information and can be integrated with store-level loss prevention programs at receiving, on the selling floor, at POS, and at the exit.)

Conclusions

As the retail industry transforms for the current customer, it is faced with many new opportunities to digitally engage and serve loyal shoppers. Unfortunately, modern technology also enables organized criminals to attack retail channels. In stores, the professional criminals are joined by other thieves, some only actively stealing because of the not so apparent retardants. To successfully thwart crime, retailers must make a very deliberate counterassault — listening, watching, protecting, responding, and serving better. Importantly, retailers must do this by leveraging more instrumented, efficient, and effective processes. EAS is one of the tools that demonstrates year after year that it thwarts theft and reduces potential losses due to shrink.

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Our study of the impact of EAS for a leading grocer validates the value that may be achieved through the application of EAS technology, which, in addition to thwarting crime, can also improve inventory performance and resultant customer satisfaction. Retailers continually demonstrate that they are getting quick wins with EAS while staying conscious of consumer needs.

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Parting Thoughts from the Retailer

This test demonstrated clearly to the participating retailer that EAS technology remains an impactful tool for controlling shrink and theft. As a result, the retailer will continue to leverage the technology by following basic program management principles:

- Tagging the highest theft items/categories and using source tagging as means to maintain this, with additional in-store tagging at the discretion of local management

- Monitoring the health of EAS through regular testing of EAS equipment

- Consistently responding to EAS alarms and inputting relevant alarm data to improve program management

Guidance

Based on our findings, we recommend that retailers take the following actions:

● Follow our ROI methodology to evaluate the impact of implementing EAS technology in your company's stores.

● Identify key stores and departments that will benefit most from implementing EAS technology, and do a trial.

● Don't shortchange results by limiting EAS implementations to too small a range of departments and products.

● Be committed because the greatest value comes from a significant commitment to EAS tagging items, responding to alarms, and actively managing inventory related to loss.

● Develop continual monitoring and training programs to ensure ongoing compliance and maximum returns.

● Get store associates involved more in reducing theft (e.g., create new programs that excite and engage them!). Employee theft is still as critical a problem to solve as external theft. Education can positively impact internal theft.

● Finally, remember the best in-store technology cannot satisfy your customers if merchandise cannot be found or is not in stock. Arm your stores and your employees with the tools to serve customers better.

APPENDIX

Basic components of the EAS solution used in this test were Sensormatic brand AM systems and labels, with the following standard components:

● **Wide exit detection AM EAS pedestals at the front end** — to accommodate double automatic doors

● **Integrated scanner deactivation** (AM EAS deactivation integrated into biplane scanners) — for intuitive and fast throughput

● **Remote alarms** — to recognize front-end activity despite the busy, dynamic, and noisy environment

● **EAS intelligence devices** — to monitor system health and provide enterprises with performance data, both of which are important to ensure that value of investment is maintained over the long term

- **AM EAS labels**

- **EAS source tagging as a primary method for protection of goods** — to enable labels to be hidden, to ensure proper label placement, and to ensure tagging compliance at targeted levels (EAS source tagging was complemented with DC tagging and minimal in-store tagging for select SKUs.)