



# ROI Calculator

RFID can help apparel and footwear retailers reduce out-of-stocks, improve inventory management and boost sales—while cutting labor costs. This report explains the assumptions behind RFID Journal's Fashion Retail ROI Calculator.



PRODUCED BY THE EDITORS OF RFID JOURNAL

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**To download an electronic version, go to:**

[www.rfidjournal.net/apparel\\_roi\\_calculator.xls](http://www.rfidjournal.net/apparel_roi_calculator.xls)

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### DISCLAIMER

RFID Journal has done everything possible to produce an ROI calculator that will help companies estimate the potential benefits that could be achieved with radio frequency identification in fashion retail, based on the information currently available, but RFID Journal makes no warranty, express or implied, that our ROI calculator will accurately forecast a specific company's benefits, or that it will be suitable for every firm's purpose. Each retailer assumes all risk and responsibility for its individual use of the calculator and related information. RFID Journal accepts no liability whatsoever for any direct, indirect, special or other consequential damages of whatever kind resulting from whatever cause through the use of this calculator or any related information, even if RFID Journal has been advised of the possibility of such damages.

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## LETTER FROM THE EDITOR



### Calculated Benefits

APPAREL AND FOOTWEAR retailers around the world are struggling with sluggish sales resulting from the most severe recession in recent memory. It might sound like the wrong time to invest in new technology, but, in fact, now is a good time to adopt radio frequency identification. Fashion retailers that have deployed RFID have found that the technology cuts labor costs significantly while boosting sales, by ensuring that their products are on the shelves when shoppers want to buy them.

Is RFID right for your stores? Until now, companies had to spend \$30,000 or more to run a pilot just to answer that question, so it's no surprise that many chose not to make that investment. That's why RFID Journal developed the Fashion Retail ROI Calculator. We wanted to give you a tool that enables you to get an estimate of how much RFID might cost, and how much return you might get on that investment. Armed with that information, you can make an informed decision regarding whether it's worth investing time and money in conducting a pilot.

We know that every retailer is different. No calculator can account for all the differences in store formats and business processes. But here's how and why our ROI calculator works.

First, we focused on the main tasks that employees in all retail stores must perform—receiving, cycle counting and replenishing. Then, we estimated labor savings based on the average labor savings achieved by retailers that have already deployed the technology. We also estimated the cost of taking inventory more frequently with RFID to improve in-store inventory accuracy. We then factored in the likely increase in sales that will result from improving on-shelf availability.

If the calculator shows a positive ROI with a payback of less than 12 months per store, you should launch a pilot to refine the inputs. The labor savings and sales increase might be bigger or smaller than expected. But the pilot will give you solid numbers to put in the calculator so you can see the likely ROI you'll achieve if you decide to move forward and deploy RFID in your stores.

We hope this tool will help you make smart decisions about when and where to deploy RFID. We will continue to refine the calculator, so if you have suggestions for how we might improve it, please e-mail [editor@rfidjournal.com](mailto:editor@rfidjournal.com). And if you do run a pilot, we'd love to hear if the benefits were in line with our estimates. If not, I hope we underestimated the ROI!

A handwritten signature in blue ink that reads "Mark Roberti". The signature is fluid and cursive, with a large initial "M" and "R".

Mark Roberti  
Founder and Editor  
RFID Journal



**Charles Vögele, a major apparel retailer in Switzerland, is among the first retailers to deploy RFID from the point of manufacture to the point of sale.**

IN 2008, apparel and footwear retailers in the United States alone lost \$27.2 billion in sales, due to out-of-stocks and other store execution issues, according to a study by the IHL Group, a research and advisory firm focused on retail technologies.

Out-of-stocks or misplaced stocks lead to goods being marked down later. Apparel and footwear retailers could capture some or most of the lost revenue by hiring and training additional employees and increasing inventory (though a study by the Wharton School of the University of Pennsylvania suggests there is a point at which increasing inventory exacerbates out-of-stocks because it makes store execution more difficult). But most retailers, particularly in the current economic climate, don't want to take on additional labor costs and the risks associated with higher inventory.

There's another option. Increasingly, apparel and footwear retailers have been examining the potential for radio frequency identification technology to reduce out-of-stocks, improve inventory management, enhance customer service and boost sales—while cutting labor costs. American Apparel in the United States, the Charles Vögele Group in Switzerland and Mitsukoshi in Japan are among the retailers that have realized such benefits from adopting RFID technology.

Still, many apparel and footwear retailers have reservations about adopting RFID technology in their stores. Some retailers don't believe they have an inventory problem that requires fixing. Other concerns include the accuracy and reliability of

reading RFID tags on items, and the complexity and cost of deploying an RFID system.

This report will address those issues. The accompanying RFID Journal Fashion Retail ROI Calculator is designed to help apparel and footwear retailers determine whether the likely benefits of deploying RFID technology in stores—labor savings and an increase in sales from better-managed inventory—would outweigh the costs. That is, would there be a return on investment from using the technology?

To demonstrate how the ROI Calculator works, we have created a “typical” specialty apparel retailer—XYZ Apparel—and entered data for that company: the amount of labor it has been using to receive goods, take inventory and replenish. The company has 400 stores, each with 10,000 items on the retail floor and 5,000 items in the stockroom. It performs five inventory turns annually, with an average selling price of \$30 per item.

We used fairly conservative assumptions—such as the estimated changes in the amount of labor needed with RFID—based on real-world pilots conducted with American Apparel, Dillard's, Karstadt, Marks & Spencer, Throttleman and other retailers. We also provided the costs for hardware, software, services and maintenance to manage inventory with RFID, based on what vendors, systems integrators and consultants told us was reasonable, as well as on ballpark figures provided by retailers that have undertaken deployments.

The ROI Calculator shows that XYZ Apparel would realize significant savings from deploying RFID in its stores. In the first year, the company would achieve an ROI of \$33,029 for each store; in the second year, \$60,890 per store; and in the third year, \$64,846 per store. Systems would likely be phased in over time, but when fully operational at all stores, RFID could contribute more than \$25 million to the company's bottom line after three years.

We have constructed the ROI Calculator to enable retailers to enter their own data in key areas—the number of items; labor spent receiving, managing inventory and replenishing; the number of receiving areas; monthly sales and so forth—and estimate the potential benefit RFID will deliver. Retailers can also run what-if scenarios or enter data based on the pilots' results.

You'll find a printed version of the Calculator on page 15. To download an electronic version, go to [www.rfidjournal.net/apparel\\_roi\\_calculator.xls](http://www.rfidjournal.net/apparel_roi_calculator.xls).

## INVENTORY MANAGEMENT PROBLEMS



**Taking inventory at an American Apparel store can now be done in a fraction of the time it once took.**

CHARLES VÖGELE IS RFID-TAGGING individual items at the point of manufacture and tracking them through the supply chain to the point of sale. The retailer reports that it is achieving a time savings of 70 percent or more when taking warehouse inventories, and a 7 percent increase in accuracy of picked orders in factories.

But this report and the ROI Calculator focus on an RFID deployment in the store, because research and early pilots indicate that's where the greatest benefits can be achieved. Retailers that have suppliers tag at the point of manufacture can easily add supply-chain tracking, if necessary, to improve shipping and receiving accuracy.

A seminal study of the out-of-stock problem in grocery and mass merchandise stores, conducted by Thomas W. Gruen of the University of Colorado, and Daniel Corsten of the IE Business School Madrid, shows that 70 percent to 75 percent of out-of-stocks result from problems at the store, while only 25 percent to 30 percent are due to upstream supply-chain issues. For apparel and footwear retailers, poor store execution is likely an even bigger issue, because their inventory is more complex. It's much harder to see that merchandise is misplaced, due to the fact that items of the same styles but in different sizes look almost identical on a shelf or rack.

Retailers surveyed by IHL indicated that "inadequate planning by buyers" was the biggest reason for lost sales, but "store execution" ranked a very close second. RFID can't help companies choose the proper styles for the coming fashion season, but the technology can help with store execution so that

when a customer wants to purchase an item, the product is available—either on the shelf or easily found within the store.

How much can RFID help improve store execution? The answer depends on the retailer—each company has different processes for managing inventory. Those retailers that execute well today will likely see a smaller increase in sales from RFID than those that execute poorly. But even those that execute well might find the labor savings and inventory reductions that can be achieved with RFID more than offset the cost of the technology.

Many retailers say the data they use to analyze their operations indicates they don't have an inventory management problem. But the University of Arkansas' RFID Research Center has analyzed information from numerous RFID retail apparel pilots—with companies such as Bloomingdale's, Dillard's and J.C. Penney—and found a mismatch between what store systems indicate is on hand and what is actually in inventory. "The system might say that 99 percent of the items are in stock, but the system counts are wrong," says Bill Hardgrave, the center's director. "In reality, what retailers think is in stock is not what is actually in stock. We've seen the same thing in every study we've done. The system might say 1 percent of items are out of stock, but it might really be 12 percent to 15 percent."

In 2008, for example, the RFID Research Center conducted a pilot at two Dillard's stores, to determine the impact of RFID on store operations. Dillard's performed one of two yearly manual inventory counts by scanning items with bar codes. Inventory accuracy increased by 17 percent after the manual count—and rose another 4 percent when RFID was used to count tagged items (RFID was more accurate than the manual count). In two control stores, where RFID was not employed to count inventory, accuracy declined by 13 percent within the first month after the manual count. Obviously, inventory accuracy would continue to decline until the next manual count.

American Apparel uses boutique-style retailing—each style must be available in all colors, and in one of each size, on the sales floor. It conducts inventory counts twice weekly in its stores that don't use RFID, and finds that more than 10 percent of items are not on the floor.

Poor inventory accuracy leads to lost sales, because items might be out of stock when a consumer wishes to purchase them, and over-

stocking leads to mark-downs. Poor inventory accuracy also has an impact on customer satisfaction. Shoppers who visit a store and fail to locate what they're looking for are less likely to return.

RFID can increase store inventory accuracy—and thus capture some sales currently being lost, or

enable a retailer to sell more items at or near full price—without greatly increasing the amount of labor needed to manage store inventory. American Apparel saw store inventory accuracy rise at RFID-enabled stores from approximately 80 percent to 99 percent, and its sales rose by 14 percent.

### RFID READ ACCURACY

MANY COMPANIES have run pilots to test whether RFID can read tags on items reliably enough to deploy the technology. While RFID is not perfect, pilots and tests conducted under real-world conditions have shown that the technology is more accurate than manually counting items—either simply counting or scanning a bar code on each item. Tests performed at the RFID Research Center found that mobile, handheld, fixed and

portal interrogators could read tags on nearly all items in a variety of common scenarios. The chart below is a summary of the center's findings. The RFID Research Center found that inventories at U.S. apparel stores are accurate only 65 percent of the time. These tests show that RFID is more accurate than manual counting, and more than good enough to enable companies to achieve a significant boost in inventory accuracy.

Test	Number of Items	Accuracy Level
Handheld interrogator used to read clothes on rounder	Varied, up to 180	100% up to 160 items, 98% with 180 items
Handheld interrogator used to read clothes on a z-bar	Varied, up to 127 (max capacity)	100%
Handheld interrogator used to read clothes in a box	Varied, up to 50 (max capacity)	100%
Handheld interrogator used to read clothes on shelves	145	99.31%
Handheld interrogator used to read clothes on pegboard	45 (max capacity)	100%
Handheld interrogator used to read clothes in piles	Varied, up to 75	100%
Handheld interrogator used to read pantyhose in display, open drawer, box	120 to 240	100%
Fixed interrogator used to read clothes at point of sale	One item at a time	100%
Portal interrogator used to read clothes on z-bar	Varied, up to 92	100% up to 72 items, 98.6% with 92 items
Portal interrogator used to read clothes in boxes on handcart	Varied, up to 72	100% up to 67 items, 99.8% with 72 items

Source: "Item-Level Tagging: Feasibility, Use Cases, ROI," presentation by Bill Hardgrave, director of the University of Arkansas' RFID Research Center, RFID Journal LIVE! 2009

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## DEPLOYING AN RFID SYSTEM

THE PROCESS FOR EMPLOYING RFID to better manage inventory and improve on-shelf availability is not complex. Retailers must receive RFID-tagged goods into the store; the unique serial numbers on the tags indicate precisely which items have arrived. RFID must be used to determine which items are not on the floor with frequent inventory counts, and the items must be picked. RFID must be used to confirm which items have been replenished, and which still need to be replenished. Point-of-sale (POS) systems can still use bar codes to indicate which items have sold, though RFID provides a more accurate and reliable view of sales.

### RFID-Tagging Each Item

According to Rose Depoe, director of RFID strategic solutions and alliances for Avery Dennison Retail Information Services, companies have three options for RFID-tagging items. They can order tags from a service bureau, which provides variably printed and serially encoded RFID hangtags or labels and delivers them to the company's manufacturing facility for attachment to garments. The garment manufacturer can overprint and encode the RFID hangtags or labels with an RFID printer and appropriate software at its own facility. Or a separate RFID tag could be applied at the firm's own distribution facilities, and be associated to the UPC code before the items are shipped to stores.

For the purpose of the ROI Calculator, we have assumed that XYZ Apparel has been using a service bureau to print hangtags and labels, and will continue to do so as it moves to using RFID technology. This approach requires only that a company pay for the additional cost of embedding the transponder in the hangtag or label. Business processes do not change.

### Receiving

Inventory accuracy begins with accurately recording the items received into a store's inventory. We have not found any studies that reveal the error rate for goods being received, so our calculator only examines the labor savings that can be achieved with RFID.

Pilots at Karstadt and NP Collection found that it takes 75 percent to 85 percent less time to receive goods into inventory with RFID. We've used 80 percent as a mean. XYZ apparel is spending 25 man-hours per week receiving goods into inventory at stores not using RFID (C23), and its hourly wage is \$12 (C24), so it can save \$240 per week per store

using RFID (cell C25 minus cell G25).

The cost of the RFID hardware needed at receiving depends on the number of dock doors or receiving stations at the back of each store. Our model assumes that XYZ Apparel has a single receiving point at each location, requiring a single fixed interrogator—either as a portal or at a table where goods are sorted and counted. We've used an installed cost of \$5,000, including a PC with touch screen for running the inventory application (cell 70). A company could add a label printer here for generating labels on goods without RFID hangtags, or for handling returns. For stores with more than one receiving door or station, increase the number of RFID interrogators required accordingly (E70).

### Taking Store Inventory

Retailers have different methods for taking inventory. Some have sales associates adjust sales floor inventory, while others use dedicated staff members—and many employ a combination. Some perform inventory counts twice annually, plus weekly bulk counts (to obtain the total number of items in the store). Some have systems that issue "need to count" orders when inventory appears in the system but there are no sales for several days. We assume that XYZ Apparel's store associates spend 24 hours per week conducting bulk inventory counts (they count all items but don't scan bar codes) and another six hours per month locating items that need to be replenished and counting individual SKUs based on "need to count" orders issued by their ERP system, for a total of 30 man hours per store per month (C32).

To maintain inventory accuracy of 99 percent or better, a company might need to conduct inventory at the end of each day and replenish items accordingly. Even with RFID, this would likely be too costly. We have heard consistently from retailers that staff can count inventory with RFID about 10 times faster than with a bar-code scanner. We assumed that each XYZ Apparel associate can scan 2,000 items per hour (G29) and the store performs a complete inventory count with RFID eight times per month (G31).

The actual labor required might be less over time. The RFID Research Center's Hardgrave suggests that as companies deploy RFID, they'll be able to perform more effective cycle counting. "The nice thing about RFID," he says, "is that you can match your cycle counting to the needs of the store's departments. Some departments might need to be

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counted only once a month. Others will need it every day. But having accurate data and visibility into real inventory allows you to set that strategy.”

### **Replenishment**

Most apparel retailers replenish based on POS data and physical checks by store associates. Both methods, however, are inaccurate. POS data can be wrong because a cashier might see six red cotton shirts and assume they're all the same, when in fact three are mediums and three are smalls. If the associate scans the bar code on one medium-size shirt and enters an amount of six, the inventory management system will show three smalls in inventory that don't exist, and indicate three mediums have been sold when they are still on the shelves.

Staff checks on inventory are more difficult in an apparel store than in other types of retail outlets, because items look so similar. When a shopper tries on a pair of jeans with a 30-inch waist and returns them to the rack with 33-inch waist jeans, for instance, it's very difficult for associates to spot these misplaced items. If another shopper later arrives to purchase jeans with a 30-inch waist but is unable to find them because they're in the wrong location, the retailer loses a sale.

RFID solves both of these problems. Because each RFID tag contains a unique serial number associated with an item of a specific style, color and size, a POS system correctly decrements inventory no matter how similar items look. And software that runs on handhelds can be programmed to indicate when a tag associated with a misplaced item is read.

With both RFID and manual systems, a store system generates a pick list based on sales. If a manual system generates a pick list of 30 items, a worker might pick only 15 items when busy, and indicate he picked all 30. Or the associate might have picked 25 items accurately and chosen the wrong item five times. The system now thinks all 30 items have been properly replenished, when they have not. This leads to out-of-stocks and lost sales.

Manual systems can also lead to “frozen inventory.” Say there are 20 pairs of jeans on a rack and a replenishment order is triggered when 15 have been sold and there are five left. If five items have been stolen, no items remain on the rack. No replenishment order is issued, because the system shows five items still in inventory. When there are no sales for three or four days, the system will issue a “need-to-count” order.

“The problem is that you've lost a couple of days of sales before the need-to-count order,” Hardgrave states. “Then you do the manual count and place the order. It might be three days before the items are replenished. You've missed a week of sales.”

Given that the most popular items are likely to be stolen or subject to inventory inaccuracies because of rapid turnover, it's likely that these items are going to be frozen more often, leading to lost sales.

Moreover, store processes tend to break down during peak periods. Replenishment isn't done because employees are busy. “In our stores, the paper [pick lists] would stack up on a busy day,” says Zander Livingston, American Apparel's director of RFID. “Then you have to try to find out who was responsible for filling certain items and so on. With RFID, you remove hand counting, so when the store is under stress, processes don't break down. The RFID stores perform during peak periods the way other stores perform during slow periods.”

As with the manual process, replenishment with RFID involves generating an accurate pick list from POS data, picking the items in the back of the store, staging them to be brought to the store floor and then replenishing. The time required to fulfill these tasks is greatly reduced. A sales associate can use an RFID handheld reader to quickly locate items in the back of the store. An RFID interrogator can check the items against a pick list while the associate prepares the goods to be brought to the floor. If an item is missing or an incorrect item is being prepared, the system can alert staff members to the problem. A portal or fixed reader located between the back of the store and the sales floor can then validate that the proper items have been brought to the floor.

We have assumed that XYZ Apparel spends approximately 25 man-hours per month replenishing the shelves from stock in the store room (C37). Based on the results reported by American Apparel, Charles Vögele and others, we have assumed that RFID will cut the amount of labor in half due to the technology's ability to identify exactly which items need to be replenished, and to locate those items quickly with a handheld reader.

### **Labor Costs**

Retailers could hire more staff to count inventory more often and improve store execution. We have estimated the cost of hiring additional labor to do more frequent cycle counts and more aggressive replenishment from the back room. This will

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improve sales, but it is unlikely to have as large an impact as RFID because of problems with any manual processes. We have included the column labeled “With Additional Labor” so you can see how RFID compares to hiring more staff. However,

we assume revenue from selling more goods at a higher price will rise only 3 percent (E54) and incremental sales based on reordering more effectively will rise 0.5% (E56) because there will still be problems with execution.

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## REDUCING SHRINKAGE

MOST RETAILERS THAT HAVE DEPLOYED RFID at the item level have not employed the technology as an anti-theft application, but anecdotal evidence from pilots and rollouts suggests that the greatly improved inventory visibility can reduce internal shrinkage (employee theft). That’s because workers are less likely to steal if they know a specific item can be accounted for in a particular place (the back room, for example) on a given day when they were on duty. To be conservative, we have assumed internal shrinkage will decline just 10 percent (some retailers report a reduction of 20 percent to 25 percent).

To calculate the benefit, we have assumed that 2 percent of sales are lost monthly in each store (G45) and 40 percent of that, on average, results from employee theft (G46). These estimates are based on the University of Florida’s Annual Retail Security Survey. For XYZ apparel, internal shrink is \$18,000 annually, or \$1,500 monthly. Reducing this amount by 10 percent (G48) would yield a net savings of \$150. But we can only attribute the value of the cost of these goods (48 percent, based on a 52 percent retail margin) to RFID. The net benefit is \$72 per store per month.

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## SALES INCREASES

DETERMINING THE POTENTIAL sales increase from achieving 95 percent inventory accuracy or better is very difficult, because the level of increase will depend on how effective or ineffective a retailer’s current practices are. The IHL study found that apparel retailers could increase sales by 7 percent if they eliminated out-of-stocks.

Retailers are reluctant to make information public regarding sales increases due to RFID, but based on information RFID Journal has received pertaining to various pilots, most companies can expect a 5 percent to 10 percent increase in sales. American Apparel has determined that its sales have risen by 14 percent in RFID-enabled stores, but we have used 5 percent for our calculator, to remain conservative.

There are two types of sales benefits that RFID can deliver. The first is squeezing more revenue out of existing inventory. Better store execution enables a retailer to sell more units at full price, or closer to full price. Since this inventory is already paid for and shipped to the store, any increase in sales flows

directly to the bottom line. Essentially, RFID helps improve the retail margin on existing inventory, so we attribute 100 percent of the benefit from this increase in revenue to the bottom line. (For an excellent analysis of the two types of sales benefits, see “RFID: Well Within Reach,” a study written by Marshall Kay for *Apparel* magazine. You can also view the Ladder worksheet within the ROI calculator to get a clearer picture of how RFID improves your retail margin.)

RFID also enables retailers to react more quickly to demand and thus reorder faster and achieve incremental sales. In this case, the net benefit from RFID is equal to the increase in sales times the retail margin.

For XYZ Apparel, we have attributed 4 percent of the sales increase to squeezing more revenue out of existing inventory (G54), and 1 percent to incremental sales through better response to demand (G56). Thus far, no pilots or rollouts have distinguished between these two types of inventory. We chose to be conservative in our assumption,

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because demand in the current economic climate is weak, and capturing incremental sales requires additional tasks that must be executed properly (reordering, moving goods quickly through the supply chain, replenishing and so forth).

Will sales really increase 5 percent or more? The focus of any retail RFID pilot should be to quantify the sales increase (as well as labor costs or savings). But we believe 5 percent is a reasonable—even conservative—expectation for the following reasons:

- Five percent is conservative, based on the results achieved by retailers that have conducted pilots or rollouts. American Apparel's sales rose by 14 percent in RFID-enabled stores, and Dean Frew, president of Xterprise, an RFID solutions provider that has done deployments for apparel retailers, says others have seen even better results. "Sales lift is actually lower at American Apparel than what can be achieved at larger chains, because the volume through the store isn't as great," Frew says. "We have worked with other retailers that have seen a much larger lift as a result of deploying RFID, because they have three or four times the number of items on the floor to sell."

Inventory accuracy at most apparel stores is poor, and customers leave the store without the product they came to buy more often than retailers realize. Marshall Fisher, co-director of Wharton's Fishman-Davidson Center for Service and Operations Management, says one major consumer electronics retailer hired an outside company to walk the aisles at the end of the day, looking for out-of-stocks. "Nearly 30 percent of the time, the computer said there was a positive inventory, but somehow the store couldn't find that inventory," he says. "There was a clear store execution problem." And in the IHL Group

study, 57 percent of surveyed retail executives rated their company better or much better than other retailers they shop, while 37 percent rated their chains the same. Only 6 percent rated their chain as worse than the other places in which they shop for goods and services.

- Better inventory management with RFID will reduce the amount of inventory needed and, therefore, reduce markdowns. Many retailers load up on inventory in an effort to avoid out-of-stocks, but the Wharton School study found that greater inventory was harder to manage and thus increased both out-of-stocks and markdowns of the excess inventory.
- RFID reduces "frozen" inventory, which leads to out-of-stocks and lost sales—particularly on hot items.
- RFID-driven processes won't break down when a store is at its busiest. Without RFID, associates don't have time to replenish when the store is extremely busy, leaving hot items out of stock during peak selling periods. RFID allows for more efficient use of labor and processes that are triggered by real-time data and confirmation of tasks, so items can continue to be replenished during peak selling periods.
- RFID enables companies to replenish stolen items. Electronic article surveillance systems alone only tell a retailer that something was stolen, but not what specifically was taken, so they fail to replenish that item, potentially leading to lost sales.
- RFID increases customer satisfaction, thereby leading to more loyal customers. The Wharton School study found that having the product on the shelf when a shopper comes in to buy it is a critical component of customer satisfaction, so out-of-stocks lead to not just a loss of an immediate sale, but potentially future sales as well.

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#### POTENTIAL BENEFITS NOT FACTORED IN

RFID IS LIKELY to be able to deliver additional benefits not included in the ROI Calculator. It's possible, for example, to use the technology to reduce employee theft by more than the 10 percent we allocated in our model if employees wear RFID-enabled ID badges and software is used to link

items to those handling them.

RFID could also be used to reduce theft in fitting rooms. Systems could be set up to alert security when, say, more than four items at a time are brought into a fitting room, so an employee could make sure the items are all accounted for when the

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customer leaves the try-on room.

RFID will likely reduce the amount of labor spent marking down items, since better store execution will result in fewer items needing to be marked down. It could reduce employee fraud, where items are substantially marked down for friends. And RFID could reduce losses associated with fraudulent returns, where people steal items at one store and return them at another for cash.

Having accurate, real-time data regarding the speed of sales and the location of goods in inventory could enable retailers to transfer inventory among stores. For instance, if there were a heat wave in one area and more mild weather in another, retailers could more confidently ship swimsuits from stores in cooler climates to those in warmer areas. That would enable them to lose fewer sales when stocks sell out in the hot areas, and to have fewer mark-downs in stores located in the cooler climates.

RFID could also have an impact on sales by enabling better overall planning and product allocation, because it takes the “guess work” out of the way that retailers currently plan, replenish and allocate their stock. “When you have the true inventory position of every store in the chain, you can more intelligently replenish and allocate stock in the current cycle and plan for the next cycle,” says John-Pierre Kamel, VP of Excellis Consulting, a business and technology consulting firm based in Philadelphia. “Increased visibility will allow retailers to do a better job of transferring stock between locations, replenishing stock, and the ordering and allocation of new stock, which can boost sales significantly for some retailers.”

RFID can also improve price optimization. VRF, a startup, has developed a reusable tag with electronic paper to display pricing. The tag could be employed to mark prices up or down, based on sales.

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## COSTS

WE HAVE MADE several assumptions that could affect costs. First, we assumed that stores have a wireless network to enable communication between handhelds and the host system (handhelds can also use a cradle to transfer data). We also assumed that the stores have a virtual private network to share data with a central server. And we further assumed that the central server and some other components will come out of the IT budget.

We have used an incremental tag cost of 12 cents for a UHF EPC Gen 2 transponder (C66). Prices vary with volume, but companies tagging more than 1 million items per year should be able to obtain tags for 12 cents or less. There is no additional cost for tag application. For our three-year view, we increased the cost of tags by the amount of incremental sales, or 1 percent (C56).

We have used a figure of \$15,000 for software for each store (G67). We spoke to some of the major players selling to apparel retailers, and were quoted prices that ranged from \$12,000 to \$20,000 per store, but are confident that retailers could negotiate a \$15,000 per store price. We have also allocated \$8,000 per store for integration costs, which means integrating the RFID system into existing

back-end store systems (G68).

We have used a price of \$5,000 for a receiving station (C70). This includes a PC and touch-screen to enable employees to interact with the system. We allocated \$4,500 for a fully installed RFID interrogator, with antennas and cabling, at the “impact door”—the door between the back room and sales floor (C71). We allocated \$3,500 for a point-of-sale reader, which requires less cabling and structural support for antennas (C72). We budgeted \$4,000 for each handheld, which includes accessories, such as batteries and a cradle (C73). And we included \$10,000 for professional services, including project management, hardware installation, configuration and training, plus go-live support. (G69),

We allocated \$3,000 for software support for years two and three (E91, G91), and set aside 10 percent of the hardware cost for support (line 95). We have not budgeted for ongoing training, since new employees need to be trained whether or not RFID is used.

The above costs are based on input from end users, systems integrators and consultants. We assessed a capital cost of 10 percent (line 97), but you can change the percentage (E20). And we depreciated the hardware over three years (line 91).

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## RECOMMENDATIONS

TECHNOLOGY CAN PROVIDE, at best, a temporary competitive advantage. Retailers compete on their ability to provide the products that consumers want to buy, and that is a huge challenge that technology cannot overcome. But apparel retail is more competitive than almost any other retail segment. "If you are out of a size-eight black cocktail dress, there are six or seven other companies in the mall that can sell you a size-eight black cocktail dress," says Greg Buzek, president of IHL Group. "That's different from electronics, where you might have to drive 20 miles, depending on where you live, to find the same item at another store."

All evidence from RFID retail apparel pilots and deployments undertaken to date suggests the benefits can be significant. In general, stores with a large number of items on the floor and in the back room, as well as fast inventory turns, will see the greatest return on investment.

We recommend that businesses plug their own

figures into the calculator. Enter the average number of items you have on the retail floor and in the back room, the number of inventory turns and the average selling price and margin. Then enter the number of labor hours spent receiving, taking inventory and replenishing. Use 5 percent for the sales increase, and see if you would likely receive an ROI within one year.

If the calculator indicates you would receive an ROI in each store within a year, run a pilot in five stores and monitor five control stores to determine what your company's labor savings would be, in addition to what the actual sales increase would be from deploying the technology. If the pilot validates the ROI, it probably makes sense to bring in a business process consultant who can help you to optimize in-store processes using RFID and look at the potential benefits that could be achieved in the supply chain. These should be incorporated into a broader rollout plan.

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## FOR MORE INFORMATION: REFERENCES, CASE STUDIES AND NEWS REPORTS

### References:

#### [\*Seizing the In-Store Opportunity\*](#)

2008 Store Systems Study produced by RIS News and research partner IHL Group

#### [\*Delving into the Mystery of Customer Satisfaction: A Toyota for the Retail Market?\*](#)

Knowledge@Wharton

#### [\*A Comprehensive Guide To Retail Out-of-Stock Reduction In the Fast-Moving Consumer Goods Industry\*](#)

by Thomas W. Gruen, University of Colorado, and Daniel Corsten, IE Business School Madrid

#### [\*RFID: Well Within Reach\*](#)

by Marshall Kay, KSA

*Apparel* magazine

### RFID Journal Case Studies:

#### [\*An RFID Fashion Statement\*](#)

Switzerland's Charles Vögele Group discovers that fashions tracked and managed via RFID are always in style.

#### [\*Clothing Manufacturer Invests Its ROI in RFID\*](#)

Gardeur AG's RFID pilot to track garments from production to its warehouse using reusable tags was so successful that it plans to roll out the system company-wide.

#### [\*Maternity Apparel Maker Gives Birth to Smart Displays in Stores\*](#)

Tomorrow's Mother says the RFID system provides timely, accurate inventory data, enabling the company to improve business processes and better meet customers' needs.

#### [\*On the Trail of Hush Puppies\*](#)

Indexport, the manufacturer and distributor of Hush Puppies footwear, employs RFID to manage its real-time stock at its Spanish distribution center in Castellón. The system enables the company to efficiently fill customer orders and avoid stock-outs.

#### [\*Zippering Up Benefits\*](#)

In the new economic reality, where the apparel and footwear industry can't count on consumers' boom-time shopping sprees, retailers are turning to RFID to increase sales, reduce losses and gain efficiencies.

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## **RFID Journal News Reports:**

### [RFID Targets Gray Market in Europe](#)

Italian clothing designer G&P Net uses RFID to track its garment inventory, helping it identify and eliminate the source of gray market sales.

### [European Commission Issues RFID Privacy Recommendations](#)

The document, which spells out ways to protect consumers but also allows for flexibility, should help promote greater implementation of RFID technology.

### [Dillard's, U. of Ark. Study Quantifies RFID's Superiority to Manual Inventory Counts](#)

The results, based on a project carried out in three of the retailer's stores, involved more than 1,000 pairs of men's jeans labeled with EPC Gen 2 RFID tags.

### [Charles Vögele Group Finds RFID Helps It Stay Competitive](#)

Switzerland's largest clothing retailer says that despite the economic recession, the best time for retailers and product suppliers to invest in RFID technology is now.

### [Fashion Group Expects Positive ROI Within 3 Years](#)

The study, carried out by the University of Parma's RFID Lab and backed by major European garment manufacturers, sees payback coming mainly from a reduction in labor and increased sales.

### [RFID Trims Costs for Retailer of Lacoste, CK, Burberry](#)

Turkish Conglomerate Eren Holding is using EPC Gen 2 RFID to track shipments and take inventory at a factory, DCs and stores it operates in Turkey.

### [Krause Outlet Takes Window-Shopping to the Ultimate Level](#)

The German retailer uses RFID to display information about each garment presented in its store windows, enabling a consumer to buy that exact item on the spot, via a vending machine.

### [American Apparel Expands RFID to Additional Stores](#)

A little more than a year after its ambitious foray into item-level RFID tagging at its stores, the clothing company is enjoying positive results.

### [Clothing Designer Brings RFID to Its Shoppers](#)

NP is expanding its RFID system to fitting rooms, store shelves and sales counters, to improve customers' shopping experience and speed the payment process.

### [Indian Conglomerate ITC Focuses on RFID Expansion](#)

The company's item-level RFID deployment is already yielding some significant benefits at two distribution centers and eight of its Willis Lifestyle stores.

### [To Glimpse RFID's Future Down Under, Gaze into the EPCmagic Mirror](#)

Co-developed by NEC Australia and GS1 Australia, the device reads RFID tags attached to items, displaying product information to shoppers and providing insights to retailers regarding customer shopping habits and preferences.

### [Jones Apparel Group Plans RFID Pilot in Nine West Stores](#)

At two sites in New York, the company plans to test the ability of item-tagging to help improve stock availability, productivity and customer service.

### [Turkish Retailer Uses Hybrid EAS-RFID Tags to Stop Theft, Improve Inventory Management](#)

LC Waikiki plans to roll out the system—which combines EPC Gen 2 RFID and acousto-magnetic electronic article surveillance technology—at 50 stores within the next six months.

### [Outdoor Clothing and Equipment Retailer Tests RFID-EAS Tags](#)

At one of Northland's stores in Graz, Austria, items are fitted with EPC Gen 2 tags that allow the company not only to manage its inventory but also to know if goods are leaving the store without being purchased.

### [VRF Offering Dynamic Price Tags](#)

The startup has developed item-level RFID tags with electronic-paper screens for displaying changeable price information and automatic markdowns, as well as for inventory and theft control within retail settings.

## FASHION RETAIL ROI CALCULATOR: EXAMPLE

Enter your company's actual numbers or estimates in the boxed cells.

Company Information			
Name	XYZ Apparel		
Total items on the floor		10,000	
Total items in the back room		5,000	
Total stock turns		5	
Average selling price per item		\$30	
Annual revenue per store		\$2,250,000	
Number of stores		400	
Total revenue		\$900,000,000	
Tax rate		32%	
Cost of capital		10%	

  

Receiving Goods into Inventory	Currently	With Add'l Labor	With RFID
Hours spent per store/month	25	30	5
Labor cost/hour	\$12	\$12	\$12
Receiving cost per store/month	\$300	\$360	\$60

  

Inventory Counts	Currently	With Add'l Labor	With RFID
No. of items on the floor	10,000	10,000	10,000
No. of items counted per person/store/hour	200	200	2,000
No. of man-hours for complete inventory	50.0	50.0	5.0
No. of complete counts per month		8	8
Total no. of man-hours per store/month	30	400	40.0
Labor cost/hour	\$12	\$12	\$12
Total cost per store/month	\$360	\$4,800	\$480

  

Back-to-Front Replenishment	Currently	With Add'l Labor	With RFID
Man-hours per store/month	25	50	12.5
Labor cost/hour	\$12	\$12	\$12
Cost per store/month	\$300	\$600	\$150

  

Total labor per store/month	\$960	\$5,760	\$690
Labor savings (cost)		(\$4,800)	\$270

  

Reduction in Shrinkage	With RFID
Total shrinkage as a % of sale	2%
Internal shrinkage as a % of total shrinkage	40%
Internal shrinkage per store/month	\$1,500
% reduction due to RFID	10%
Value of reduction in shrinkage per store/month	\$150
Net benefit of shrinkage reduction	\$72

  

Sales Increase	Currently	With Add'l Labor	With RFID
Sales per month/store	\$187,500		
% revenue increase from higher AUR*		3%	4%
Rev. increase per month based on higher AUR		\$5,625	\$7,500
% revenue increase from incremental sales		0.5%	1%
Revenue increase from incremental sales		\$938	\$1,875
Retail margin		52%	52%
Profit from incremental sales attributable to RFID		\$488	\$975
Gross incremental profit per store/month		\$6,600	\$8,475

  

Total benefit per store/month	\$1,800	\$8,817
Total benefit per store/year	\$21,600	\$105,804

  

Cost for RFID System per Store	Cost Per Unit	Units	Total
Incremental cost of RFID hang tags	\$0.12	75,000	\$9,000
Software			\$15,000
Software integration per store			\$8,000
Professional services			\$10,000
Receiving/tagging station	\$5,000	1	\$5,000
Impact door	\$4,500	1	\$4,500
Point-of-sale	\$3,500	1	\$3,500
Handhelds	\$4,000	2	\$8,000
Total hardware costs			\$21,000
Total investment in RFID per store			\$63,000

  

Payback period (months)	7
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Three-Year View			
Depreciation (years)	3	Resale Value	\$3,300
Return on Investment	Year 1	Year 2	Year 3
Profit contribution from higher AUR	\$105,804	\$108,978	\$112,247
Reduction in shrink	\$864	\$873	\$881
Elimination of 2 yearly physical inv. counts	\$1,800	\$1,800	\$1,800
Labor savings (cost) attributable to RFID	\$3,240	\$3,240	\$3,240
Benefits attributable to RFID	\$111,708	\$114,891	\$118,169
Costs			
Annual cost of tags	\$9,000	\$9,090	\$9,181
Software license	\$15,000		
Software maintenance and support	\$0	\$3,000	\$3,000
Software integration	\$8,000		
Professional services	\$10,000		
Hardware cost (depreciated)	\$9,660	\$5,216	\$2,817
Cost of hardware maintenance	\$2,100	\$2,100	\$2,100
Corporate overhead (IT and other)	\$4,000	\$4,000	\$4,000
Cost of capital	\$5,376	\$1,941	\$1,710
Total costs attributable to RFID	\$63,136	\$25,347	\$22,808
Per store gross profit	\$48,572	\$89,544	\$95,361
Taxes	(\$15,543)	(\$28,654)	(\$30,516)
Net profit per store	\$33,029	\$60,890	\$64,846
Chain-wide net profit	\$13,211,584	\$24,355,892	\$25,938,273
Net present value**			\$51,627,176

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# American Apparel Case Study Write-up

By Reik Read, Robert W. Baird & Co.

## Executive Summary

AMERICAN APPAREL successfully piloted RFID at the item level and, once funding is secured, expects to roll out RFID to all of its 260 stores over the next eighteen months. Our analysis suggests the per-store payback on the RFID project is about 4.5 months given increased sales from fewer out-of-stocks and reduced labor. RFID boosted revenue by providing improved inventory visibility and automation that enabled process changes to ensure a full complement of product offerings were available on the retail floor at all times. This was accomplished with reduced labor for weekly cycle counts and inventory searches. The company began a proof-of-concept test in one store to validate RFID could help improve out-of-stock inventory, and the project was later increased to eight stores to conduct a full pilot.

## Company Profile

AMERICAN APPAREL, headquartered in Los Angeles, California manufactures, distributes, and sells at retail basic fashion apparel for men, women, and children. The company primarily offers t-shirts, denim, sweaters, jackets, and other casual wear at its roughly 260 retail stores in the United States,

Canada, Mexico, Europe and Asia. American Apparel also owns a wholesale business that supplies t-shirts and other casual wear to distributors and screen printers and sells goods on line. All manufacturing is done at a single location in Los Angeles where the company produces roughly 1.5M apparel pieces per week. The company generated revenue of \$545.1M in 2008, or growth of 41%. At retail, where the RFID system is used, revenue was \$382.4M in 2008, which grew 58%. Comparable store sales were up 21% in 2008, and the company saw good expansion, adding 78 net new stores worldwide. However, given the challenging retail environment, where same-store sales are now down, American Apparel is being cautious with its capital spending budget in 2009 with \$20M-\$25M in planned expenditures versus \$68.7M in 2008, suggesting project funding will be selective.

Each company store has on average roughly 12,000 stock keeping units (SKU) on its retail floor, and it is company policy to have only one of each SKU on the retail floor at all times. Replenishment inventory is housed in the store stockroom, typically located in the basement. In total, the average store has about 38,000 items, with about 12,000 on the store floor and 26,000 in the stock room. Once

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an item is sold, company policy requires store personnel to immediately replace that item on the retail floor shelves or clothing rack. Replenishment orders to the factory are generated daily based on the goods that are transferred to the retail floor. Today, this process relies on bar code scanning to perform inventory transfers from the stockroom to the retail floor and on scanning data at point-of-sale.

In order to ensure compliance with company policy of a full complement of inventory on the retail floor, store personnel perform a twice-per-week physical inventory count by visually inspecting each rack or shelf. Historically, any missing items are physically circled on a copy of the store inventory checklist. Physical inventory counts and sales floor inventory replenishment historically require about 240 man hours each month to perform. With this system, about 100-300 items on average are discovered to be missing at each cycle count.

### **Pilot Approach**

GIVEN THE RELATIVELY higher-than-desired number of missing items at retail, the company became concerned with potential lost sales due to out-of-stocks, and began to evaluate RFID as a potential solution. The company initially fitted its Columbia University store in New York in November of 2007 as a test pilot to confirm the technology would work. The company elected to use UHF Gen 2 technology given the automated nature, and deployed two tabletop antennas from Vue with two fixed Motorola XR440 readers in its storeroom, and one Vue antenna and a Motorola XR440 fixed reader between the store room and the retail floor and two Vue table top antennas and a fixed Motorola XR440 reader at point-of-sale. The table top readers were fitted with homemade "bucket" housings to direct the RF energy thus eliminating false reads outside of the desired read zones. All existing store inventory was tagged manually. American Apparel employed Vue's TrueVue software platform for the trial. Tags were Avery Dennison's AD-222 hang tag.

In terms of process flow, new merchandise is tagged at the factory or manually upon arrival at the store. Note that since American Apparel is a vertically integrated manufacturer, it is easier to source tag at manufacturing, including commissioning to associate the item with the tag. While not critical to driving value for this project, we view this as a key enabler for incremental supply chain applications that could provide increased value in the

future. Upon arrival, each article is scanned with an RFID reader to receive the item. Once this process is complete, goods are moved into general store-room inventory. Replenishment for the retail floor is triggered by the sale of an item, where the RFID tag is read at point-of-sale (POS). Each RFID tag can provide information on a specific item when read at POS, which may enable future help with merchandising or loss prevention. Previously, this information was generated with a bar code scan. Please note, the company is seeking to reuse a portion of tags, and once removed from the item, they are housed in a metallic container next to the POS station to prevent unwanted re-reads.

The POS process provides an alert in the storeroom that an item must be replaced on the retail floor. Storeroom personnel pick the item from inventory, and read the item's RFID tag on a second RFID-enabled table in the storeroom, which confirms to the application software, RetailPro, that the item is moved from stock inventory to staging for retail replenishment. Each item is placed on a hanger or properly folded at the staging area. Once a sufficient number of items have been properly staged, they are moved to the retail floor, where a reader located between the store room and retail floor reads items in transit and compares them against the staging inventory. A monitor allows personnel conducting the inventory transport to visually confirm the correct items are being moved to retail to ensure proper replenishment. Once confirmed by transport personnel, the system updates the retail floor and staging inventory in RetailPro. The previous process of staging and moving goods to the retail floor required manually scanning each bar-code tag, which necessitated more time and provided less ability to confirm the proper replenishment process.

### **Benefits Achieved**

AS A RESULT of the RFID process, inventory is updated more frequently with less manual intervention. The system provides a real-time view to store managers and senior management regarding out-of-stock positions in aggregate or by store, allowing for corrective action as needed. Further, management gets a more up-to-date look at merchandising trends. American Apparel has indicated that inventory accuracy from the system is running above 99%. To provide some context, prior to the project, management estimated American Apparel was suffering from 10% in lost stock, and once the visi-

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bility was improved with RFID, they discovered the problem of lost stock was actually closer to 20%.

At each store, Motorola MC-9090 handheld readers allow store personnel to perform bi-weekly cycle counts and associated inventory replenishment using about 52 man-hours per month, versus the manual process, which took roughly 200 hours per month for two general weekly cycle counts and sales floor inventory replenishment, plus an additional 40 hours per month for selected styles cycle counting. Total labor savings are 188 hours per month, which will require fewer people to man each store. In addition, management indicated stock room associates were only spending 50% of their time on stockroom organization and transfers as cycle counting required 50% of their time. With the RFID-based system, 75% of time can be spent on tasks that help improve revenue, including faster receipts, stock room organization, transfers and customer service. Given these efficiencies, American Apparel is able to manage two stores for every "store manager" compared to a one-to-one ratio for traditional stores.

As a result of the system, each store has fewer out-of-stock items, down below 10 per cycle count, and sales have increased just over 14% per square foot on average. The methodology employed to determine the revenue increase was to compare revenue from the eight RFID implemented stores against two sets of metrics-against the same eight stores for the same time period a year earlier (adjusted for cannibalization from new American Apparel store openings), and against similar non-RFID stores in the same geographic region. The two high and low outliers were discarded and the remaining store average demonstrated an increase of 14.4%.

### **Pilot Challenges**

AS PART OF THE process, the company uncovered several initial challenges, including basic employee training, modest process changes and equipment layout. Given American Apparel's relatively younger store employee base, the technology training was relatively well accepted and successful. With respect to process changes, there were a few added steps, such as tag commissioning, and a few variations on existing processes, such as moving items around when scanning to ensure full reads. With respect to equipment layout, key issues included outfitting tables with housings to direct RF energy, reader mounting, and cabling and changes to metal shelving to ensure tags could be read. The shelving

issue was solved with a low-cost layer of bubble-wrap and particle board which created an effective air-gap between the tag and shelf.

With the one store, the company found success with its RFID system and was able to overcome early obstacles. However, the company believed that a true pilot would need to be conducted in many stores simultaneously to understand all the key issues and how they would be managed. This is particularly true as stores are in many different locations, have diverse sizes, varying traffic patterns and offer a unique assortment of merchandise. The company outfitted seven additional stores (six in New York and one in Santa Monica, California), and found several additional challenges to be overcome, including systems management, data aggregation and scalability.

With multiple stores open, the IT department could no longer focus on just one store and take rapid corrective actions. Systems management needed to be centralized, store personnel had to be further trained and third-party support was required for servicing. The company also realized that software updates and provisioning would need to be centrally done, rather than terminal-by-terminal, which would be overly time-consuming. The new implementation saw a large and regular number of "emergency calls." After only a few months, the number of these calls dropped significantly as the American Apparel staff addressed these issues and further institutionalized the RFID process. The staff now has good knowledge of what will be required to fully deploy the system.

### **RFID Value Add - ROI Analysis**

AFTER RUNNING with eight stores fully since November 2008, American Apparel was able to assess its RFID system against its existing technologies and processes. The analysis shows an average payback of roughly 4.5 months per store. On average, sales per store increased 14% as a result of more key items in stock (fewer out-of-stocks) and given store personnel had more time to interface with customers. Further, each store saved over 188 hours per month in labor given reduced cycle counting and storeroom search time. Based upon American Apparel's average mature store revenue, found in the company's most recent 10-K filing, and our estimates, we forecast an average store net operating income benefit (tax adjusted) of \$126,900 in its first year of implementation. The initial investment was about \$47,400 per store, which included

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the original tag fitting, the readers, associated equipment and installation, the software, and initial training and store inefficiencies.

With respect to our analysis, we worked with American Apparel to determine several key inputs, extracted information from investor presentations and the 2008 American Apparel 10-K filing with the Securities and Exchange Commission. We also made some additional assumptions on our own. In terms of benefits, we applied the 14% revenue increase to average retail store sales and boosted gross profit by the average retail margin in 2008 of 65.9%. This generated \$172,528 in incremental gross profit benefit per store on average. We estimated fully burdened labor to be \$12 per hour, which provided annual savings of \$27,072 per store on average. Our analysis did not assess the potential for better merchandising strategies from incremental data, or evaluate loss prevention applications. With the new system, American Apparel is discovering data that allows the company to hone in on theft, which has already resulted in several recoveries. Further, our analysis does not include any potential benefit by using RFID between the factory and stores or for the returns process and we do not include any potential inventory reductions. Given the vertical nature of American Apparel's operations, we expect good value can be attained on these incremental applications for a relatively modest incremental expenditure.

The initial costs, which included all hardware, software, cabling, project management, initial training (and associated labor inefficiency) and support costs were calculated to be \$47,370. We assumed each store would need on average 72,200 tags per year, given an average item count per store of 38,000 and 1.9x inventory turns each year. We further assumed a 50% reuse rate on the tags. Given this, annual per store tag costs are \$2,708. We factored in annual maintenance costs per year equal to 10% of the initial hardware costs, and we assumed \$200,000 in annual corporate support costs. We depreciated the initial costs over three years for an annual expense of \$15,780; any benefit above this level was taxed at the U.S. corporate tax rate. This was more conservative than simply applying taxation on benefits above the total project cost in the first year; however, if applying this methodology, the payback period would be 0.4 months faster. We also assessed a capital charge of \$6,154 based on a 13% cost of capital.

This analysis assumes the system deployment is

financed by American Apparel. Our understanding is that a potential lease option exists to include all hardware, software and service costs for \$2,700 per month per store over a three-year period. This assumes a residual value on the hardware at roughly 10%-20% of original cost.

### Next Steps

AMERICAN APPAREL worked in conjunction with Xterprise to develop a scalable software package that also addresses incremental application requirements. Xterprise software is written on top of Microsoft's BizTalk Platform. This new software was initially tested in a single store in late January for roughly 90 days. American Apparel is now ready to roll out to its entire store base, which is expected to begin this summer. Assuming current economic conditions will permit funding, the rollout would likely begin with 8 pilot stores in the U.S. and an additional 38 in Canada. The company hopes to take advantage of new integrated reader/antenna technology to further lower its initial deployment costs. The company hopes to have all stores complete by the end of 2010.

### [American Apparel RFID analysis](#)

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#### About *RFID Monthly*

*RFID Monthly* is published by Reik Read of Robert W. Baird & Co. Read has covered the automatic identification and collection industry for more than 11 years, and has been writing *RFID Monthly* for the past five years. He has been a regular presenter and panelist at RFID industry events, including RFID Journal LIVE!, the EPC Connection Conference, AIM Global's Showcase and the University of Wisconsin E-business Consortium. Read was also recognized in 2006 among the Best on the Street by *The Wall Street Journal*, ranking first in the Electronic & Electrical Equipment sector. Read also ranked second in the Electronics category by *Forbes* in 2008.



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