



Item-level RFID

A Competitive Differentiator



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RFID Nears A Tipping Point

Item-level RFID is becoming a competitive differentiator for several leading companies in the retail supply chain. Chain-wide rollouts by a number of North America's largest clothing retailers are a clear sign that this technology will soon be broadly adopted by the industry.

As Malcolm Gladwell notes in his influential book, *The Tipping Point* (2000), new ideas often languish until they suddenly and almost magically catch on.

This may be especially true of the kind of networked systems that have created so much value over the past 30 years – bar codes, the Internet, the global cell phone network, and most recently, Facebook and the other online social networks. In each case, the concept was technically feasible long before it became a mass phenomenon.

The bar code was invented in 1952 but didn't take off until the late 1970s. Most of the basic engineering of the Internet was completed by 1969 but the Internet didn't really take off until the early 1990s. In each case, a complex interplay of developers and consumers eventually sparked widespread adoption, almost overnight.

RFID now appears set to catch fire too. An October 2011 survey of 58 suppliers and 56 retailers in North America, conducted by Accenture on behalf of the Voluntary Interindustry Commerce Solutions Association (VICS) – Item-Level RFID Initiative, confirmed that many executives across the entire retail supply chain are convinced that item-level RFID can improve efficiencies and boost sales. More specifically, the results of this survey and other research conducted by VICS and Accenture suggest:

- Item-level RFID may be creating a competitive advantage for early adopters by giving them better inventory accuracy, visibility, and insight, enabling them to improve in-stock positions and increase sales.
- For some processes, the technology can now drive improvements several orders of magnitude better than current standard methods. For example, taking a store inventory, once a project of days or weeks, can now be tallied with lightning-fast near-perfect accuracy.
- Costs of RFID tags are falling, and will continue to fall as the rate of adoption increases.
- Most major apparel and footwear retailers will adopt RFID technology in some part of their business within the next 3-5 years if recent momentum continues.

What Took So Long?

Flashback to 2001: RFID is the next big thing in retail. Retailers and suppliers alike are excited about the inventory transparency and supply chain benefits the technology promises to deliver. Ten years later, we're still talking about RFID as an emerging technology, but this time it's different.

The underlying technology has improved steadily along the way, but that's only part of the story. The other part is a clearer idea of how to use it. The initial focus within retail was on tagging pallets and cartons of consumer packaged goods, with a strong emphasis on efficiencies within distribution centers and stockrooms. Retail mandates would drive adoption.

When the catalytic moment never arrived, and mass adoption did not materialize, many presumed that RFID's utility had been exaggerated and never looked back. This obscured the steady progress being made by innovative retailers who began tagging softline merchandise at the item-level, with the simple goal of driving inventory benefits within the four walls of the store. As their pilots proved successful, item-level implementations have expanded steadily. Now, item-level RFID is nearing chain-wide rollouts in multiple categories in a number of major retailers, including Macy's, Bloomingdale's and Walmart in the U.S.



The VICS board's decision to adopt the guidelines for tag placement and performance and serialization gives a strong signal to the industry that all trading partners need to move beyond limited trials and consider full fledged rollouts of RFID systems at the item level. GS1 EPC standards, which enable companies to identify, capture and share information to deliver real time visibility into inventory and business processes. GS1 EPC standards increase visibility and efficiency throughout the supply chain and improve quality information flow between companies and their key trading partners. VICS has also endorsed the use of GS1 Keys, Barcode Data Capture standards and other GS1 technical standards, including VICS EDI.

More retailers get on board

Many large retailers and consumer goods suppliers, including Walmart¹, have now conducted successful item-level RFID pilots. Among the most recent:

- American Apparel gained 99 percent inventory accuracy and a 14 percent sales increase.²
- By instituting item-level RFID, one demand-driven company shrank its cash-to-cash cycle time by 35 percent, lifted revenues 10 percent, and generated 5-7 percent better profit margins. (AMR Benchmark and Analytix Data)
- Bloomingdale's branch in Manhattan's SoHo district achieved inventory accuracy of 95 percent. Sales rose and inventory shrink rates dipped.³
- German fashion retailer Gerry Weber now carries an RFID tag on roughly 20% of its stock. Woven right into the clothing care label, the tags are giving Weber better delivery control of logistics providers, because deliveries and returns can be sped up. Inventory can be tallied very quickly with little or no error.⁴ As noted earlier in this report, RFID readers do not need to make physical contact with the product, which means retailers can take a store inventory using RFID technology much faster than with barcodes.

Executives Weigh In

Retailers who have utilized item-level RFID say it has reduced their need for inventory adjustments, cut transportation costs, and increased sales. As they had predicted, retailers associate the benefits of item-level RFID mainly with better visibility to inventory. Not only does this new visibility improve execution within the four walls of the store, leading to increased unit sales and better full price sell-through, it also helps them satisfy customer demand more effectively.

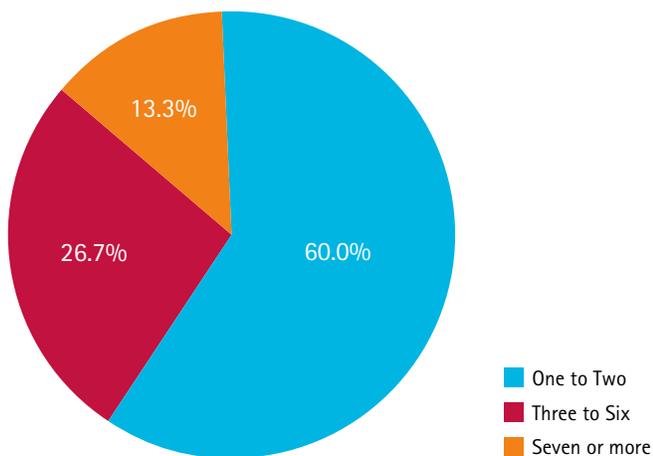
Over half of the suppliers surveyed have implemented or piloted item-level RFID. Nearly 40% of them have piloted with three or more retailers, and several have even worked with seven or more retailers – a statistic we read as a clear indicator of momentum. (Reference Figure 1)

Suppliers who have tried RFID aren't suffering from buyer's remorse. They say they had anticipated better inventory management, loss prevention, and better distribution management as the most important results of implementing RFID, and found the technology has largely delivered. Suppliers also found other benefits they had not anticipated, including savings on transportation costs and deeper customer insights.

Suppliers who have not implemented still believe it will work. While concerns abound among suppliers who have not implemented the technology, skepticism of its benefits is not a reason they have not tried RFID. Most who haven't tried RFID yet are preoccupied with other priorities or don't feel the timing is right.

Figure 1 – Suppliers Who Have Implemented item-level RFID

How many retailers have you piloted item-level RFID with?



Finding the R.O.I.

For all the advantages in total supply chain visibility RFID can create, building a business case for the technology has not been easy. Ironically, the fact that advantages are so widely distributed throughout the supply chain makes it difficult to narrow down the net present value of RFID adoption.

Accenture suggests a simpler way to begin thinking about the shared supplier/retailer opportunity in any given category is to work back from the one that gets everyone's attention: increased sales. Recent item-level RFID pilots have proven that the technology is having a big impact in reducing stockouts and related missed sales opportunities.

Most surveys suggest that retailers lose 4-8% of sales on stockouts, not including the opportunity cost of disappointed customers who leave the store without buying anything else.

Working back from that figure, the math becomes very simple: if the total variable cost of tagging each item is 20 cents (cost of tag materials + labor) and average unit margin in a category is \$5, the category would need a 4% sales lift to break even on RFID. Anything above that sales lift generates a positive ROI.

Unlike the other additional benefits harvested in the value chain, the gains to be found reducing stockouts are shared by suppliers and retailers alike and relatively easy to agree on.

Other factors such as distribution efficiency, customer insight, reduced labor, or loss prevention will sweeten the total pie but aren't likely to drive adoption of RFID in a given category for the first time.

Of course, any business investment of importance requires a more rigorous business case, but this back-of-the-envelope calculation is a good way to help suppliers and retailers quickly target the areas where they are likely to find a shared opportunity.

Total Tag Cost	Average Unit Margin	Required Sales Lift to Break Even
\$0.30	\$1.00	30.0%
\$0.30	\$2.00	15.0%
\$0.30	\$5.00	6.0%
\$0.30	\$10.00	3.0%
\$0.30	\$20.00	1.5%
\$0.20	\$1.00	20.0%
\$0.20	\$2.00	10.0%
\$0.20	\$5.00	4.0%
\$0.20	\$10.00	2.0%
\$0.20	\$20.00	1.0%
\$0.10	\$1.00	10.0%
\$0.10	\$2.00	5.0%
\$0.10	\$5.00	2.0%
\$0.10	\$10.00	1.0%
\$0.10	\$20.00	0.5%

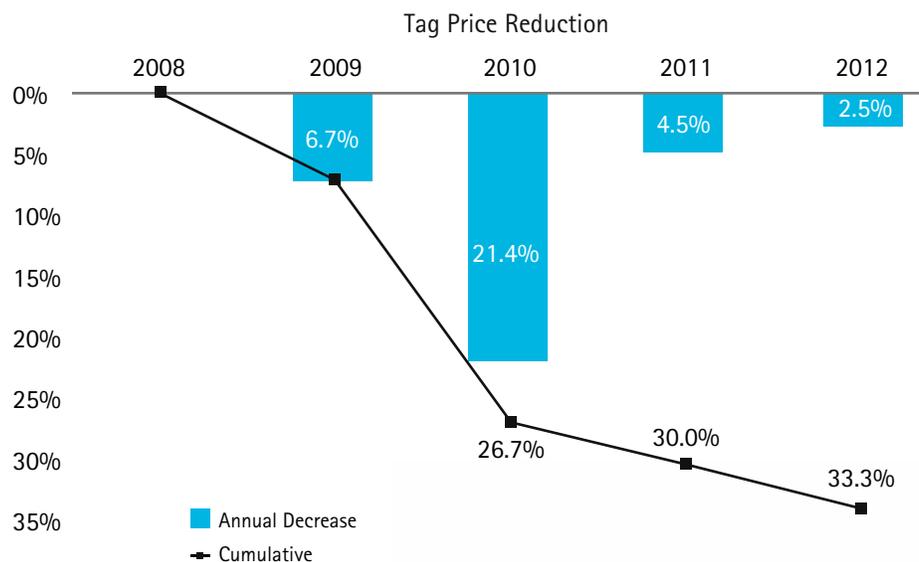
The Tag Cost Bogeyman

The biggest obstacle for both retailers and suppliers seems to be the overall cost of tagging – or rather its perceived cost: actual prices are lower than many people realize, even within the industry. As with many technologies today, the cost of entry and operation keeps falling even as capability and reliability rise.

Many people think fully converted tags still cost anywhere from 50-75 cents each, high enough to make it seem like a specialty technology suitable only for luxury goods or products requiring extreme levels of security.

The reality, however, is that tag prices have fallen dramatically in the last few years. Price tag costs have dropped by nearly a third since 2008, according to one large manufacturer (Reference Figure 2). Today, RFID tags from major suppliers are said to be available for as little as 10 cents a tag (depending on the requirements and type), multiplying the number of products that can be profitably tagged and managed with RFID technology (see the 'Finding the R.O.I.' sidebar).

Figure 2 - Market Adoption and Tag Pricing



Looking Ahead

After a decade of spotty pilots and false starts, RFID has finally found a permanent home at a number of North America's leading clothing retailers.

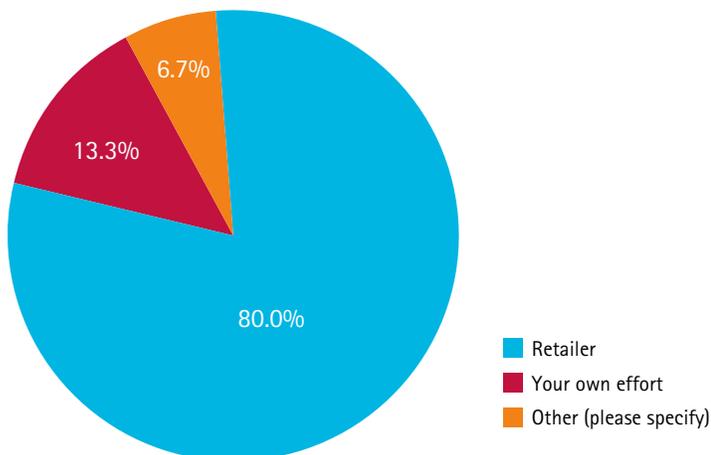
In the near term, this survey suggests that retailer requests will continue to be the primary driver of adoption within the Department Store and Mass Merchandise sectors. Of the suppliers who responded to our survey who have implemented a pilot, 80% say they did so at a customer's request. (Reference Figure 3) But suppliers ---- especially those who produce rapidly replenished merchandise such as denim, underwear, foundations, t-shirts and footwear ---- will soon begin to play a role in increasing momentum as well. Some of these suppliers have reached an internal tipping point and are already considering tagging entire product lines. In several cases, suppliers have taken the lead in initiating pilots with hesitant retailers.

As more and more retailers adopt RFID, and as retailers currently using RFID broaden their rollouts to additional merchandise categories, it will become clear to suppliers that broad industry-wide adoption is now under way. Many more suppliers will quickly reach their own internal tipping points. Within the Department Store channel, broad adoption in categories with high replenishment will be followed by a similar proliferation in categories with fashion and seasonal merchandise.

If this occurs, it will be in line with what has been generally observed of innovation in almost every field. For at least 100 years, scholars have observed that innovations tend to be adopted along an S-curve that rises sharply once a number of factors fall into place, including the experience of a number of successful early adopters, falling costs of adoption, and the degree to which the new technology creates an advantage for the user. The results of this survey suggest that item-level RFID will soon reach just such a point.

Figure 3 – Suppliers Who Have Implemented item-level RFID

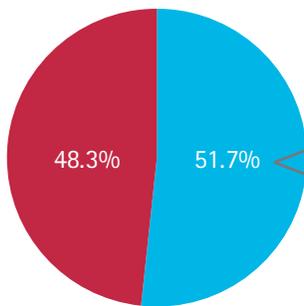
Who initiated the pilot?



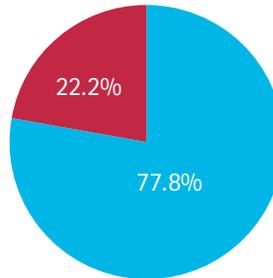
Appendix

Figure 4 – Item-level RFID implementation and plans to expand programs

Have you implemented/piloted item-level RFID within your organization or with any of your trading partners?

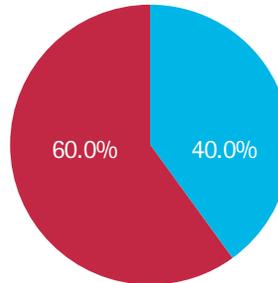


■ Yes
■ No



Retailers that have implemented RFID
Do you have plans to scale your program to include more categories or products beyond where you are today?

■ Yes
■ No

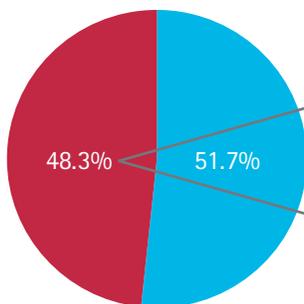


Suppliers that have implemented RFID
Do you have plans to scale your program to include more categories or products beyond where you are today?

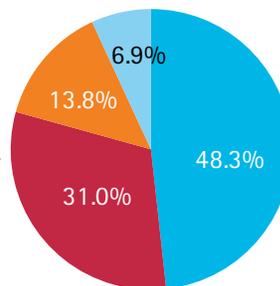
■ Yes
■ No

Figure 5 – Reasons for not implementing item-level RFID

Have you implemented/piloted item-level RFID within your organization or with any of your trading partners?

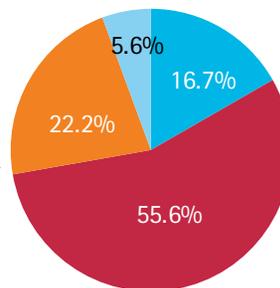


■ Yes
■ No



Retailers that have not implemented RFID
My company's plans for item-level RFID can best be described as:

■ We're thinking seriously about piloting the technology in the near future
■ We're cautiously optimistic but waiting to see more progress in the industry
■ We're skeptical and don't have any plans to implement item-level RFID
■ Other



Suppliers that have not implemented RFID
My company's plans for item-level RFID can best be described as:

■ We're thinking seriously about piloting the technology in the near future
■ We're cautiously optimistic but waiting to see more progress in the industry
■ We're skeptical and don't have any plans to implement item-level RFID
■ Other

Figure 6 – Benefits from implementing item-level RFID

What were the realized benefits of your item-level RFID program? (choose all that apply).

Retailers that have implemented RFID

Answer Options	Rank
Improved inventory visibility	1
Reduced lost sales associated with fewer out-of-stocks that result from "phantom" inventory	1
Improved inventory accuracy	3
Increase the number of perpetual/cycle counts that can be done annually	3
Improved customer insight	5
Increased sales by providing customers with more accurate information on product location	6
Reduced down time during physical inventory	6
Reduced store labor associated with cycle counting inventory and performing adjustments	8
Improved demand forecasting and planning	9
Reduced corp admin labor w/ fewer inventory adjustments and reconciliation	9
Reduced distribution costs	9
Reduced chargebacks	9
Improved margin with fewer end-of-season markdowns that result from un-recognized store inventory	13
Reduced shrink/loss prevention	14
Reduced transportation costs	14
Reduce anti-counterfeit (reduce knock offs)	16

Suppliers that have implemented RFID

Answer Options	Rank
Improved inventory visibility	1
Reduced shrink / loss prevention	1
Improved inventory accuracy	3
Increase the number of perpetual/cycle counts that can be done annually	4
Increased sales by providing customers with more accurate information on product location	4
Reduced down time during physical inventory	4
Reduced lost sales associated with fewer out-of-stocks that result from "phantom" inventory	4
Improved customer insight	8
Improved demand forecasting and planning	9
Improved margin with fewer end-of-season markdowns that result from un-recognized store inventory	10
Reduced chargebacks	10
Reduced store labor associated with cycle counting inventory and performing adjustments	10
Reduced corporate admin labor w/ fewer inventory adjustments and reconciliation	13
Reduced distribution costs	14
Reduce anti-counterfeit (reduce knock offs)	15
Reduced transportation costs	15

Figure 7 – Challenges to implementing item-level RFID

What are perceived as the greatest challenges facing your item-level RFID program? (choose all that apply)

Retailers that have implemented RFID

Answer Options	Rank
Cost of tagging	1
Trading partner buy-in	1
Executive level buy-in	3
Cost of hardware	4
Cost of software	5
Reliability of systems and data	5
Ownership of the process within the organization	5
Cost of running dual processes (RFID + Barcode)	8
Organizational change/culture dynamic and resistance to change	8
Other	8
Consumer acceptance or education	9
Maturity of the technology	9
Labor union resistance or hurdles	9

Suppliers that have implemented RFID

Answer Options	Rank
Cost of tagging	1
Cost of hardware	2
Reliability of systems and data	3
Cost of software	4
Ownership of the process within the organization	5
Organizational change/culture dynamic and resistance to change	5
Executive level buy-in	7
Trading partner buy-in	7
Consumer acceptance or education	7
Cost of running dual processes (RFID + Barcode)	7
Maturity of the technology	7
Other (please specify)	7
Labor union resistance or hurdles	8

About The Authors

Mike Gorshe is a Partner in Accenture's Consumer Products and Services Practice. Mike focuses on client engagements throughout the world, supporting manufacturers, retailers, wholesalers and food agents in the effective management of business change to optimize consumer satisfaction, channel strategy and shareholder value. Mike is a frequent industry speaker in addition to being an academic guest lecturer. He also serves as an executive member of industry advisory boards in food marketing at Michigan State University and Western Michigan University. Mike is a charter board member for the Network of Executive Women (NEW) and sits on NEW Executive Committee. Mike is also an active member with the GMA Associate Member Executive Advisory Committee, and FMI's Joint Executive Advisory Board. Mike is based in Chicago, Illinois, and can be reached at michael.a.gorshe@accenture.com.

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Endnotes

1. Miguel Bustillo. July 23, 2010. "Walmart Radio Tags to Track Clothing." Wall street Journal. <http://online.wsj.com/article/SB10001424052748704421304575383213061198090.html>.
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3. Susan Reda. November 2010. "Ready (Finally) for Item-Level Deployment." <http://www.stores.org/STORES%20Magazine%20November%202010/ready-finally-item-level-deployment?page=show>.
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