

## View Point



### RFID Tagging - Is the time ripe for Retail early adopters?

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Operating at razor thin margins in a highly competitive and largely undifferentiated market, top retailers are always on the look out for opportunities that have a positive impact on the bottomline. Retailers have engaged in several initiatives to operate at higher levels of efficiency. Extensive use of information technology for process automation, supply chain collaboration techniques like CPFR, VMI and efficient data exchange mechanisms like EDI and XML have all enabled leading retailers like Wal-Mart to run a tight-ship and gain competitive advantage. With RFID inching up to the peak of inflated expectations in the hype cycle, this paper explores whether the added benefits from RFID provide reasonable justification for accelerated adoption by these enterprises.

## Radio Frequency Identification

RFID is an Automatic Identification and Data Capture (AIDC) technology which allows for non-contact reading to track and monitor physical objects. There is a tremendous interest in the application of RFID to the Manufacturing/Retail Supply Chain, which has gained momentum primarily on the strength of the technological advances that are bringing down the costs of tags and readers, and the efforts of the EPC Global Inc. in establishing industry standards. A key benefit of RFID technologies is *automatic identification* of individual objects coupled with *automatic data capture*. Automatic electronic identity contributes significantly to enhance *supply chain visibility*, and the automation brings in data capture and has a direct bearing on *operational efficiency* in labor intensive Retail Logistics.

## Supply Chain Visibility

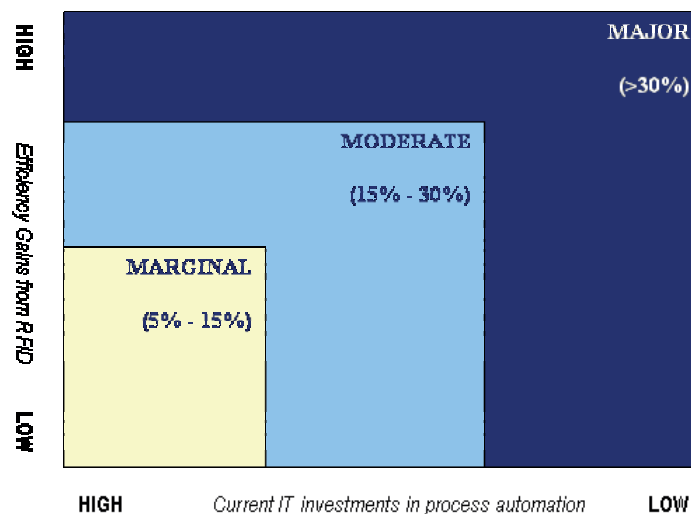
Physical tracking of merchandise today is a challenge with significant implications across the supply chain for Retailers. Visibility into the merchandise pipeline within the enterprise is extremely critical to ensure that an optimal level of inventory is maintained – not too much to lock in excess working capital, and not too less to cause stock-outs. Also, lack of visibility results in insufficient coordination between material flow and information flow often causing a magnification of demand variability in each level up in the supply chain – a phenomenon popularly known as the bullwhip effect. Companies rely on a variety of means for real-time data and process integration to alleviate this problem.

## Operational Efficiency

A key element of cost in a retail enterprise is the area of Logistics Management – encompassing all activities that enable the movement of merchandise from vendor/manufacturer premises to the intended point of sale. About 25-30% of the supply chain costs can be attributed to labor costs in the process of distributing merchandise. Retailers extensively use software tools for warehouse management, yard management and transportation management. Industrial automation systems like conveyors, carousels, unit sorters enable enhanced operational efficiency within the distribution center. Business process innovations like multi-order picking, pick-to-light, use of voice and wireless technologies have all contributed significantly to higher productivity in warehouse operations.

## Potential benefits of RFID to Retail Enterprises

Falling prices of tags and readers and the rapid strides in the standards development process is making RFID technology an increasingly viable option for pallet and case level tagging. However, Retailers stand to gain most when individual items are tagged, with significant opportunities in enterprise inventory management and retail store operations. While the current tag costs rule out the economic viability of item/unit level tagging in most cases, there still could be a good business case in certain specific merchandise categories and applications. Pallet and Case level tagging also has the potential to enhance operational efficiency for the Retailer.



The likely return on investment from RFID tagging varies largely, and is an inverse function of the current level of process optimization. Typically, processes that employ lower levels of process automation tend to demonstrate *higher* returns. For example, the receiving and check-in process in warehouses as well as stores is a labor intensive and time consuming process. For a warehouse that currently employs minimal automation in the receiving process, one can expect *major* benefits by one-step receiving achieved using RFID tagging. On the other hand, the benefits would be much lesser if one-step receiving is already deployed using state of the art material handling equipment and data capture means. What follows below is a quick look at the potential benefits from RFID in various functions in the Retail value chain, and an assessment of the added value over and above a process that employs the state-of-the- art automation.

Function	Benefits from RFID	Current State-of-the Art	Potential added value from RFID
Replenishment Planning	Enhanced in-stock merchandise position		Moderate
	Enhanced visibility and accuracy of data will enable planning systems to make accurate projections. Reduced in stock inventory and increased inventory turns	Near real-time visibility accomplished by intra-enterprise application integration	
Transportation	Real Time Routing		Moderate
	Visibility of merchandise in transit enables real-time changes in routing decisions	Systems in place to provide visibility, albeit at a higher level of granularity	
Yard Management	Operational Efficiency		Moderate
	Tags on trucks and trailers enable efficient tracking enhancing the reliability of yard management	Manual data entry	
	Better Utilization		Major
Tracking/Loss Prevention	Reduced times in loading and unloading enables higher asset productivity	Relatively less efficient	
	Cost control		Moderate
Reverse Logistics	Increased effectiveness in preventing shrink. Tags enable automation of the security processes.	Largely Manual and less efficient	
	Efficiency		Moderate
Store Operations	Unit level tagging enables better management of the returns process	Largely manual	
	Inbound Receiving		Major
	Automated receipts. Unit level tagging will increase inventory accuracy.	Manual scan/data entry	

Function	Benefits from RFID	Current State-of-the Art	Potential added value from RFID
	Loss Prevention		Major
	Unit level tagging combined with smart shelves will reduce shrinkage in the retail store	Manual methods, EAS tags etc are less effective	
	Enhanced Check-out		Major
	Unit level tagging can potentially enable automatic self checkout. Higher efficiency and accuracy.	Manual/Self check-out counters less efficient	
	Customer Service		Major
	Better management of recalls and product warranty support	Manual process	
	Inventory Management		Major
	Cycle counting and Physical inventory process can be highly automated	Labor intensive manual scanning process	
	Exception Management		Major
Enhanced visibility at a unit level enables retail store management to better handle exceptions	Manual process		
Warehouse Receiving	One step Receiving		Moderate
	Automated receiving for an appointment. RFID portals will read the tags and update the inventory quantity.	Receipt of pre-labeled (barcodes) cases automatically by identification using a 3D tunnel scanner.	
	Automated Checks		Moderate
	Verification of discrepancies between the received merchandise and the purchase order can be automated.	Automatic routing of the cases to Vendor/Quality audit areas. Inspection process is manual	
	Reductions in direct labor costs		Marginal
Manual functions like printing receiving labels, scanning/keying in the receipts a case at a time, and PO matching can be largely eliminated.	Advance visibility into inbound merchandise using vendor ASN data. Pre labeled cases eliminate the need for keying-in data or PO matching.		

Function	Benefits from RFID	Current State-of-the Art	Potential added value from RFID
Putaway to reserve area in the Warehouse	Simplified Putaway		Moderate
	Pick up and drop loads without the need to scan location and case barcodes.	Automatic diverts based on pre-labeled barcodes. Location and case scanning prior to stocking is manual	
	Automated Updates		Moderate
	Automatic updates to reflect the quantity at the new location when a load is dropped at a reserve location	Manual Scanning	
Replenishment to pick face in the Warehouse	Accurate Location Inventory		Moderate
	No more 'Case/Pallet not found' type of situations.	Possibility of such errors do exist	
	Simplified pick-up and drop-off		Moderate
	Pick-up and drop off load without scanning the product or the location.	Manual scanning	
	Automated verification		Major
	Automated alerts to notify errors in stocking product	Verification though manual scan of location tag	
Order Filling in the Warehouse	Automated Updates		Moderate
	Automatically verify and update inventory quantity and pick-completion information.	Manual scan/update	
	Efficient Pallet Picks		Moderate
	Pallet pick assignments can be a mere pick-up without the need for scanning	Manual scan/update	
	Efficient Case Picks		Moderate
	Task assignments for paper picks from storage locations will not need scanning	Manual scan/update	
	Automated Checks		Major
	Prompts alerting inaccurate pick counts (case/unit).	No such direct capability	

Function	Benefits from RFID	Current State-of-the Art	Potential added value from RFID
Warehouse Outbound Shipping	Automated dock loading		Major
	Cases and Pallets can be directly conveyed from conveyors onto the trailers without scanning the outbound labels.	Manual scan prior to loading case onto trailer	
	Automatic creation of Bill of Lading		Major
	Shipping documents will be created systemically to reflect exact trailer contents.	Based on scanned data during dock loading. Possibility of manual error	
	Operational Efficiency		Marginal
Higher read accuracy and minimal diversions to 'noread' lanes.	3D Tunnel scanners eliminate no-reads to a large extent		
Warehouse Automated Counts Inventory Control	Automated Counts		
	Cycle counting and Physical inventory process can be highly automated	Labor intensive manual scanning process	Major

## Conclusions

The evaluation clearly identifies functional areas in retail enterprises where the added value is reasonably high even for processes employing the current state-of-the-art process automation. However, the retail industry faces several challenges in RFID implementation. There is a good deal of effort involved in software development, application integration and building the capability to 'act' on the additional data captured across the value chain. The implementation costs will also include tags and readers, and the imperatives of making them work in cohesion with existing wireless infrastructure in stores and warehouses. Significant process re-engineering is also necessary and will involve employee retraining and change management. Also, a key concern is the fact that full potential of RFID can be realized when all value chain partners including suppliers and distributors fully collaborate in the initiative.

Despite the challenges, numerous examples of private and proprietary implementations of RFID by retailers including Wal-Mart, Tesco, Metro, Prada and others have demonstrated the viability of this technology. Widespread adoption fueled by open standards will open up further opportunity for benefits across the extended value chain of the retailer.

The time now is perfect for retailers to begin a phased approach to RFID technology research and adoption. By identifying most promising business functions and piloting the technology in a controlled environment, key metrics can be gathered that would aid the business case development. Based on the findings and learnings from initial pilots, a larger scale field trial can be extended which would help retailers reduce the overall risks and implementation costs.

### About the Author:

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## About the RFID Solution from Infosys:

Infosys offers a range of RFID services from concept to implement. Our comprehensive solution stack includes a structured methodology for phased adoption, a model for business process analysis and RFID use case development, and a RoI toolkit that helps firms assess the potential of RFID in their business context. Edge Server Lite - our ready to deploy software accelerator for RFID event management and enterprise integration enables firms to jump start their RFID initiatives at a lower TCO. For more details on our solution for RFID adoption, please visit <http://www.infosys.com>.



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