Item-Level RFID in Retail Facilities

Exploratory Investigation of its Value Creation Potential for Enabling the Real-Time Retail Demand and Supply Chain

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Retail demand and supply chain
GPS/RFID enabled supply chain visibility & tracability
Item-level RFID implementation in a retail store

The next step

- Tagging each individual product unit, not just the boxes and the pallets
- Tagging each cart
- Using smart card allowing voluntary clients to be tracked through the store to request help through the smart card
- From passive to active tags, all the way to 3D positioning
Investigating the potential of item-level RFID enabled retail stores: a stakeholder approach

If item-level RFID enabled retail stores are to fly, they have to deliver high value to all key stakeholders.
RFID enabled retail store simulator

1. Arriving client
2. Shopping clients
3. Targeted client
4. Paying client
5. Shelves with product units
6. Payment booths
7. Empty Carts
8. Entering client with empty cart
9. Employee with cart in backroom
10. Employee replenishing a shelf
11. Real-time operating stats
12. Targeted client real-time status
An agent oriented object based simulation model
Behavioural modeling of individual client agents

• Some know the store, others not
• Some will serpentine systematically while others will hop from a shelf to the next in their list

• All have a shopping list, with combinations of specific brand products and unspecified brand products

• Some stick to their shopping list
• Others are influenced by prices
• Some are impulsive buyers

• They are more or less patient, when they do not find the products at their expected location
• Some will get out of the store after having faced stockouts
Contrasting RFID vs. Barcode enabled stores
The time advantage enabled by RFID
The time advantage & the intelligence advantage

**Time advantage** refers to the ability of connective technologies to accelerate data acquisition and transfer. It aims at increasing the time allotted to managers to make their decisions.

**Intelligence advantage** relies on the management system’s ability to extract intelligence from raw data. It requires, firstly, collecting new types of pertinent data and secondly, enhancing the analysis and treatment of data.
LiveRetail: a platform enabling the investigation of the time and intelligence advantage potential
LiveRetail Store Piloting Cockpit
LiveRetail Client Cockpit
LiveRetail online connection to supplier

• Today, as of this minute:
  – 235 clients passed in front of your product’s shelf
  – 85 stopped in front of your shelf
  – 3 stopped while there was a shelf stockout of your product
  – 53 took your product in their hands
  – 36 put it in their cart
  – 34 purchased it
  – 126 purchased your competitors’s products
  – Current shelf inventory : 12
  – Current store inventory : 62
Contrasting inventory dynamics using LiveRetail

Tracking the quantity of a product in an RFID enabled store simulation

Tracking the quantity of a product in a barcode enabled store simulation
Conclusion

• Beyond reducing pilferage and inventory counts, the real key to item-level RFID enabled retail stores is to exploit its time and intelligence advantages to bring value to all key stakeholders.

• Assessing the value of item-level RFID implementations requires to model the dynamics of retail operations through a platform such as LiveRetail.

• LiveRetail piloting cockpits pave the way for the type of management technology that will be needed to really exploit such stores to their full potential.

• From a research perspective, three avenues:
  1. Extending the modeling, simulation, monitoring and piloting capabilities
  2. Perform empirical simulation based experiments
  3. Pilot such implementations with retail partners
Thank you for your attention!

Questions and comments are welcome.

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