Slotting - Tools and Views on Smart Replenishment

Track 5 Session 8
Abstract

Optimizing the selection, replenishment, and putaway locations of your stored inventory based on demand and history sounds great on paper. Why wouldn't you do it? This point-counterpoint panel discussion debates the utility of contemporary slotting/reslotting software vs. the subjective wisdom of manual management. Included will be a short overview of a typical modern tool, a friendly discussion of the 2 approaches and some time for audience Q & A and participation. It may not be conclusive but will be fun to watch!
Slotting Optimization Defined

“Warehouse Slotting Optimization” is arranging the items in the warehouse in the optimal manner to meet an operation’s slotting objectives subject to a specified set of goals and constraints.
Slotting Tools

- “That’s the way we’ve always done it”
- Spreadsheet/Database
- Profiling Software
- Advanced Slotting Software
Slotting Tools

Advanced Slotting Software

Profiling Software

Spreadsheet/Database

“That’s the way we’ve always done it.”
Slotting Optimization: Historical

- Picking, putaway and replenishment inefficiencies
- Inadequate customer service picking accuracy
- Inefficient warehouse space utilization
- Picking and shipping volume throughput constraints
- Lack of pick locations
- High variability of seasonal and promotional item volumes
Slotting Optimization: Today

- Proactive vs. reactive slotting for exceptions
  - Seasonal items
  - Periodic promotional items
  - SKU proliferation
  - Obsolete product

- Capitalize on today’s technology
  - Make use of forecast data
  - Perfection only exists for a minute

- Employee buy-in
Traditional Slotting Optimization Benefits

- Slotting Optimization yields significant potential benefits
  - Minimizes travel, picking and replenishment costs
  - Increases productivity
  - Enhances service readiness
  - Reduces operating and capital expenditure costs
  - Improves pick line efficiency
  - Reduces inventory damage
  - Improves overall order quality
  - Optimizes storage and retrieval
Advanced Slotting Optimization Benefits

- Increase SKU capacity
- Improve warehouse throughput capacity (lines per hour)
- Reduce employee picking injuries
- Reduce employee safety, inventory storage and facility risks
- Reduce customer/retail receiving and stocking labor costs
Warehouse Heat Map Approach

• Many distribution centers are small to mid-tier facilities that stock a limited number of SKUs (e.g. <5,000)

• These operations can benefit from slotting optimization but may lack the financial resources to purchase packaged slotting optimization software

• These companies seek a more simple spreadsheet approach that can be applied every 3 – 6 months as a means to maintaining the ‘health’ of the operation

• For this profile of operation, there is a technique available called “warehouse heat mapping”
Warehouse Heat Map Case Study

- Full & Split Case Distribution Center (majority is full case)
- 3,300 SKUs
- 12 months of sales orders gathered
- Item Master file with accurate cube data required
- Microsoft Excel used as the tool to perform all analytics, reslotting, and simulation of travel & picking time for each order released to the floor
- Reslot is run every 6 months as new product lines are released to maintain slotting optimization
- Simple, easy to use, low cost approach allows less complex operations to maximize ergonomics and efficiency
• Warehouse map is easily made in Excel
• Map shows 12 months of order lines by pick slot for 3000 SKUs
• Darker shade means more activity
• Combined with order history, the heat map allows you to focus on the SKUS that cause the most travel time

Before Slotting Optimization
Warehouse Heat Map Example

- Goal is to ensure all darker shaded cells move towards the front of the facility to minimize travel into the back half of the warehouse.
- Heat map shows the heat after re-slotting is performed.
- Order simulation performed proves a 11% picking productivity gain as a direct result of this reslot.
- For this company the direct savings in labor cost amounted to $120,000 per annum.
Key Takeaways

• Yes, your business is unique – but there is a slotting/reslotting strategy for you
• A manual (spreadsheet) approach may work fine for you
• As you grow – order quantity, order size, # of SKU’s – you can invest in an advanced tool and reap the benefits
• Like any other new technology, requires buy-in from DC staff to ensure success
Additional Resources

• MWPVL International
  - “The Art and Science of Warehouse Slotting Optimization”

• Optricity
  - “Rethinking Your Reslotting Strategy”
  - “Increase Performance in Your Slotting Universe”
Questions?
• Additional Materials
Actual Slotting Software Results

- Pick labor hours reduced by 11%
- Replenishment labor hours reduced by 23%
- Replenishment labor dollars reduced by 13%
- Retail product grouping improved by 51%
- Reduced total pick path travel by 10%
- Separated caustics from edibles with separate pick paths
- Picking labor dollars reduced by 3%
- Annual retail labor savings equivalent to 16 times investment
Actual Slotting Software Results

- Reduced pick labor by 11% in each-pick area based on full reslot using velocity sequencing and golden zoning
- Completed “what-if” scenario analysis to reveal partial reslot (20% of moves) reduced labor by 9%
- Replenishment frequency improved by 300%
- All items slotted with pallet EOQ quantities
- 68% of SKU representing 98% of hit velocity slotted in 43% of travel path (without congestion)
- 23% improvement in travel distance by order - reduced from 3500 feet to 2700 feet
# Warehouse Heat Map Close-up

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- Notice how each full case pick location has a number inside the cell.
- This is the number of order lines that were picked from each pick slot over the past 12 months
- The higher the number of lines the darker the shade of the cell
- Similar maps for movement history in cases, cube, pallets can easily be made