



# Distribution Center MANAGEMENT

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Managing people, materials and costs in the warehouse or DC

## From the Golden Zone

### Profiling vs. slotting: Understanding the differences, realizing the benefits

by Dan Basmajian, Optricity

In an environment in which companies seek competitive advantages while also trying to cut costs, optimization has become a topic of increased interest in the supply chain industry. Both profiling and slotting optimization techniques respond to these dual demands by trimming distribution costs, minimizing capital expenditures, increasing efficiencies, and reducing labor.

Proper profiling maximizes space utilization within a slot type. Using a spreadsheet or specialized profiling software, an item's slotting unit dimensions are evaluated relative to each slot type's dimensions to determine which slot types can accommodate the item with the least amount of space left over.

In a profiling exercise only slot types are evaluated, not specific slot locations, so the assignment of an item to a unique slot location is not accomplished during a profiling exercise. Rather, location assignment must be done as part of a slotting exercise.

An operation can achieve replenishment cost reductions by moving an item from one slot type to another or changing the facings and stackings of an item to align with outbound item movement. In many pickline environments, selector travel distance reductions are difficult to attain, especially due to product grouping rules that are

applied down the pick path. In these situations, profiling items to the right slot types provides the benefits of better space utilization and reduced replenishment costs.

For greenfields, profiling provides additional benefits by helping to determine how many of each slot type would be required to store any given set of items. Profiling may also be used to evaluate an existing warehouse to determine how well it is racked relative to the set of items being slotted. Warehouses that appear to be "out of space" can undergo a profiling exercise to identify re-racking that could provide additional space without significant expenditure.

Slotting extends the functionality of profiling by considering actual pickline locations. Slotting adds the concept of item sequencing to extended profiling.

Sequencing is key in most picklines. A pickline is slotted down the pick path in velocity sequence to minimize selector travel distance. At the same time, outbound pallets must be stable, with crushables on top. Sequencing rules like velocity, case height, and case density are built on top of all the rules applied in an extended profiling exercise. In many environments, sequencing goals and constraints must be accomplished within product groupings.

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## Slotting benefits

Slotting capabilities go far beyond those of profiling. While profiling determines the best slot type for each item based on dimensions and movement data, slotting determines the best slot type and the best location for each item. Slotting considers the locations, opening dimensions, weight limitations (by level), product grouping, item slotting unit dimensions and weight, and item picking unit dimensions and weight, among other factors, to profile and sequence items down the pick path.

The benefits of proper slotting include lower DC operating costs. The customer benefits through better service levels; selectors and replenishers benefit through a safer environment. All profiling benefits are realized with the opportunity to also reduce selector travel path, reduce bend and reach, build stable loads, and minimize accidents and breakage. The slotting concept of sequencing based on goals and constraints creates additional benefits.

Considering actual pickline slot locations and then sequencing items down the pick path based on goals and constraints is exactly what slotting accomplishes.

Additional benefits to proper slotting include:

- **Building solid outbound pallets.** Because slotting includes sequencing, and sequencing enables items to be picked and stacked on a pallet in item density/height sequence, an operation must slot to build solid outbound pallets. Profiling does

not include sequencing, so other inferior approaches must be employed to build good pallets. Product groupings are created based on item densities, but the variation in densities within a group may be wide, resulting in possible product damage on the pallet. Smaller groups of items lose flexibility in the pickline in terms of where an item should get slotted.

- **Vertical movement through the DC.**

The previous example is based on horizontal movement. But in the vertical direction, slotting allows for Golden Zone or productivity wedge slotting, both of which are sequence based. Profiling cannot easily handle either of these techniques.

- **Velocity-based sequencing.** Slotting allows for velocity-based sequencing, both in horizontal and vertical directions. But with profiling, an operation must create velocity zones, a more cumbersome approach, and one whereby the opportunity to reduce travel distance or bend and reach is greatly diminished.

Every operation has its own challenges and needs. Both profiling and slotting are valuable optimization techniques that can remedy these challenges. The key for any operation considering these processes is to know when to use profiling and when to use slotting.

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