

Optimizing Warehouse Slotting for Increased Productivity

1 Introduction

When a leading footwear & apparel distributor with over 2,600 stores in various countries across North America, Asia, Australia, and New Zealand faced issues with labor costs, they knew it was time to act. With over 100,000 SKUs and over 300,000 locations across three distribution centers (DCs) in the United States, they were looking to increase picking efficiency and reduce labor costs.

2 The Challenge

One key challenge that this company faced is that all three DCs had pick locations that were not slotted to reduce picker travel time. Also, case pick efficiency was low due to long travel paths which increased overall labor costs. Finally, the current put-away-logic was not defined to reduce travel time for replenishment of the pick areas.

3 The Solution

The company partnered with Alpine Supply Chain Solutions for slotting support. Alpine started by analyzing the outbound shipment records, item master, and location master. The team visited all three DCs, developed digital twins in the OptiSlot slotting software and validated inputs with the customer. Also, with the input from the client, Alpine finalized the list of constraints to be used for the slotting scenarios such as no heavy cases (greater than 25 pounds) on the top/bottom level of the each pick area, allowing only two orientations of case dimensions, using like item separation, placing footwear vs. apparel in different zones, and separating footwear zones based on the manufacturer.

After describing ABC Pareto's law based on hits, Alpine worked with the company to input travel option settings in the slotting tool which includes average picker horizontal and vertical travel time, average replenishment travel time, average set up time per order and pick, average close time per order and pick, and average hourly rate. Then based on the site visit findings and customer feedback Alpine incorporated the travel pick path for all pick areas by pick type.

For the 'eaches' pick areas within all DCs, Alpine performed at least four slotting scenarios based on different sets of goals, rules and constraints. By pick area, Alpine developed comparative reports to evaluate and compare all scenarios using real time peak week orders. Next, the team finalized the scenario that could be implemented by comparing the improvements from baseline using metrics such as lines picked per man hour, units picked per man hour, total distance traveled, total travel time and total replenishments required.

Based on the optimal pick slotting scenarios for each pick area, Alpine provided the customer with a detailed moves list. This requires moving products from one zone to another or within the same zone, as a daisy chain moves list that might have anywhere between two and 30 moves per move set.

For the 'full case' pick areas within all DCs, Alpine performed three slotting scenarios based on different sets of goals, rules and constraints. After reviewing the comparative reports produced, they finalized a slotting solution that reduces travel time and minimizes pick and replenishment costs for the customer. Alpine recommended not to move any A & B items because of how fast they move within the case pick area, but provided three other recommendations. The first one was to update the Warehouse Management System (WMS) for directed put-away based on Priority 1, 2 and 3 slots that Alpine had provided. Next Alpine recommended that they clear out all of the items from Priority 1 locations. Finally, they suggested putting away SKUs in Priority 1, Priority 2 and Priority 3 slots.

5 The Outcome

In the end, Alpine Supply Chain Solutions achieved the metrics that were agreed to during the kick-off call with the customer. The company is expected to save \$198,000 per month which is going to be an expected \$2.37M savings per year. This translates to a 53 headcount reduction, assuming \$45K annual costs per employee.

6 Conclusion

The footwear & apparel company was very data oriented and embraced Alpine's methodology. They also had high quality data which aided Alpine throughout the entire project. Overall, it was a successful project for both parties and the customer was very happy with the results.

