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This article appeared in the Council of Supply Chain Management Professional's newsletter, *CSCMP Supply Chain Comment*, Volume 42, July/Aug. 2008. *CSCMP Supply Chain Comment* is published six times a year by CSCMP.

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TAKE A RIDE ON THE FULFILLMENT SUPERHIGHWAY

by Mark Riedel and Larry Kuhn

Today's distribution center managers have many forces pulling on them. The total amount of orders is increasing while the quantity of items per order is decreasing. This results in far more fulfillment cost-sensitivity.

There is also an ever-increasing pressure on service levels; orders must go out very shortly after receipt. Finally, there is a need to accomplish these services using temporary personnel during peak periods of demand. These trends are prevalent across diverse industry sectors including business-to-business (B2B) and business-to-consumer (B2C) segments. In a typical distribution center satisfying both of these segments, we've seen the following trends.

TAKE A RIDE ON THE FULFILLM

Customers have become more and more accustomed to, and expectant of, instant gratification as a result of the proliferation of highly competitive e-commerce companies. These companies are shipping more orders with fewer items per order, resulting in increased costs in all facets of the distribution. In particular, labor, packaging, and transportation have become very significant portions of the overall costs of doing business.

In addition, massive seasonal and holiday surges in demand often result in the need to use transient workers. We look for a superhighway through the fulfillment process that will reduce the costs and complexities of picking, packing, and shipping for a significant portion of the orders.

First, consider single-piece orders. Pareto statistics seem to hold over a wide range of business types assuring ample opportunity for streamlining. For instance, it is not uncommon for more than 50% of orders to fall into this category. These orders can be moved onto what we named the fulfillment center—*express-lane superhighway*—for highly-efficient picking, checking, packaging, and manifesting. Huge savings are possible by focusing techniques specifically appropriate for this type of order. Processing them can be highly-simplified and handled by temps during busy season surges.

Productivity improvements for these kinds of orders can be significant. We have seen picks per hour improving by over 100% in some facilities! This is not taking into account the savings associated with the reduction in time for new hires to reach acceptable productivity levels.

These savings are achieved by using an order management system (OMS) to pull single-unit orders from the total order pool. They are gathered into super batches specifically tailored for consistent packaging requirements based on their cube and category. The super batches might contain tens or even hundreds of orders that can be picked in a single walk through the distribution center. Each batch is taken to an outbound process appropriate to its common characteristics.

Typically, each outbound area is characterized by a step in which each unit's barcode is scanned and automatically assigned to an order. The packing list prints at that time. There are many variants in levels of automation. The batching process makes a best-fit decision regarding grouping of orders for a common and optimal outbound methodology.

In one distribution center (DC), most batched products can be taken to a totally automated process for weight checking, packing, void fill, packing list insertion, shipping label application, manifesting, and sortation by carrier (e.g., FedEx, UPS, DHL, etc.). Each single unit is scanned as it is inducted into the process. The warehouse control software automatically assigns it to an order. The unit is automatically processed with a surrounding box and void protection.

A packing list specific to the assigned order is printed and automatically inserted, just as a shipping label prepared by the manifesting software is automatically printed and applied to the exterior. Both the packing list and the shipping label are scanned to assure that there have been no errors. The completed package moves onto a parcel sorter and is directed to the proper carrier shipping lane.

The system operates at 20 orders per minute with minimal staffing and negligible errors. It is truly the express lane of the superhighway. **The customer is satisfied when he or she receives the right product in an expeditious manner and distribution management achieves its goals of lower costs, higher service, and a very high quality level.**

As described, the single-unit orders are effectively placed on the express lane and are no longer congesting the other "roads." Now, what can be streamlined with the orders that must be relegated to slower moving local lanes and highways? Initially, there is cream we can skim from the top before turning to more expensive routes.

In particular, we can look at using simpler OMSs to achieve major additional benefits. Other types of orders can be batched by the OMS to maximize the efficiency through the facility. The most expensive and inefficient part of picking is the walking or traveling to a location for a pick. By giving the picker the tools to pick more than one order at a time, the distance walked is reduced. We use the



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same cartonization programming that was discussed earlier to batch orders together that are best packaged together.

In one facility, we implemented this system by batching orders into either 27-order carts or six-order carts (based on the total cube of the order). The system gave the operator a document that allowed him to walk the facility one time, telling him which items to place in which slot for each order. Because of the lopsided skewing of stock-keeping unit (SKU) requirements towards fast movers, it was not uncommon for operators to pick at one location for multiple slots (orders) in the cart (batch).

Upon completion of the efficient single-pass pick, the order cart was directed (no decision making by inexperienced operators) to an outbound packaging and shipment processing area that was optimal for the commonality of the orders in each batch. This type of batching, in effect, moved the fulfillment off the surface streets and onto a highway. **This company experienced a picking rate increase of 100% on these orders.**

Slightly less aggressive packaging automation than we've described above for single-unit processing was applied to the batched multiunit orders in this company. This allowed it to dramatically improve its checking and packing functions by having stations that were set up to handle specific carton sizes. The packed cartons ran through a semiautomatic taper, were weighed on an in-motion scale, had a shipping label automatically printed and applied, and then were automatically sorted by the conveyor to the correct carrier.

When the improvements in picking efficiencies and post-pick processing were considered together, the overall savings were dramatic. We have seen midsize companies that have implemented these solutions realize savings of over a million dollars annually. These savings could be significantly higher,

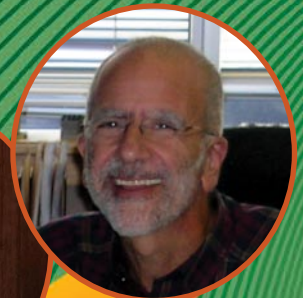
depending on how efficient their operations were and on the number of orders they were shipping. Whatever the final number was, the payback and return on investment (ROI) for systems similar to these was frequently less than ten to 12 months, and well within the financial requirements to justify the project.

No matter what the business is, the population of orders to be processed can usually be divided into logical sectors, each of which has a different optimal method of fulfillment. It behooves each fulfillment operations manager to understand these groupings.

Consequently, OMS can be used as a software tool to automatically group orders for common optimal fulfillment. It has often been found that single-unit orders offer the largest target for easy savings, both in terms of the quantity of orders and the efficiencies in processing. ■



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