



Maximizing Productivity in E-commerce Warehousing and Distribution Operations

Tags: [E-commerce](#), [Warehousing](#)



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As e-commerce continues its rapid growth into virtually every market sector, retailers are anxious to expand their presence online to capture this market share. Between 2006 and 2010, global online retail sales grew by 16.3 percent annually, according to Global Online Retail 2011, published by Datamonitor.

Online retail sales for 2010 alone showed an annual growth rate of 17.8 percent on total revenues of \$434.6 billion. This level of expansion of Internet sales is fundamentally changing the nature of the retail supply chain.

E-commerce Challenges

For decades, consumer products have been distributed to retail stores in bulk, via pallet loads and cases. Now, online ordering is pushing brick-and-mortar retailers beyond this traditional supply chain infrastructure.

Traditional fulfillment—encompassing receiving, putaway/storage, picking, transport through the distribution center (DC), sortation, value-added services, packing, and shipping—is a poor option for handling the needs of e-commerce. To compete in this virtual arena, picking, packing, and shipping single items and small volume orders to consumers is the name of the game. Orders require delivery to customers—not weekly or bi-weekly as with retail stores, but typically within 24 to 48 hours.

Add to this complex fulfillment environment the demands of continual stock-keeping unit (SKU) proliferation. Internet retailers need to support an ever-increasing selection of merchandise that typically includes fast-moving items and many very slow-moving items. How these SKUs are picked and handled can present two very different operations.

From the moment the online order is placed to when it is picked, packed, and shipped, every step in the process must be handled efficiently, consistently, and cost-effectively. In e-commerce, the distribution center provides much of the customer experience. Simply delivering the goods is no longer an adequate mission for the fulfillment center—customer satisfaction has to be a critical priority. The typical e-commerce consumer expects a wide selection of SKU offerings, mobile-site ordering capability, order accuracy, fast and free delivery, and free returns.

Understanding how online consumers shop and purchase across channels is critical to the success of online fulfillment. More consumers are browsing the Internet for features and selection, testing products at brick-and-mortar stores, acquiring discounts through social media, then purchasing the product online through the convenience of their mobile device.

Some retailers,—including those that also sell through catalogs—have been in the direct-to-consumer marketplace for some time. These companies have fulfillment facilities established and information technologies in place to manage orders with speed and efficiency, doing it well and profitably. But to many distribution executives, online fulfillment poses a significant challenge to their existing knowledge, experience, and resources.

Smarter 3PLs Improve E-commerce Fulfillment

As an alternative to in-house fulfillment, a large number of retailers have turned over Internet order processing to 3PLs that are equipped and experienced to handle these online needs. Retailers whose online orders are growing at an accelerated rate often prefer the flexibility of working with a 3PL that can help them continue to expand.

In fact, 3PL usage is experiencing rapid growth, expanding at a rate of 12 to 15 percent annually. This outsourcing growth is clearly influenced by the corresponding increase of online purchasing.

But 3PLs are also continuing to gain acceptance by online retailers because of the sophisticated software engines they have put in place to capture orders on the front end, and process these orders through their warehouse management systems (WMS). On the front end this includes managing the Web portal and site, updating content, and supplying telephone call centers with live operators that take orders, dispense product information, provide technical

support, and process return orders. Efficient returns processing becomes a major benefit in e-commerce, considering the much higher number of returns compared to brick-and-mortar sales.

Because of the digital nature of e-commerce, its infrastructure permits integration of systems that help unify information across multi-channel inventory, order management, promotions, merchandising, and distribution systems. The most advanced 3PLs operating within e-commerce provide this capability.

These systems allow 3PLs to record the relevant details of each item and parcel being shipped. Parcel shipments can be tracked, and proof of delivery quickly confirmed. A customer’s transportation costs and performance can be analyzed, thus helping 3PLs to negotiate rates and improve service.

Integrated ordering and parcel tracking is made possible through the 3PL’s WMS, which is an ideal system for the precise and efficient tracking of products. The WMS—communicating with the ERP, along with sensors in the pick-and-pack systems and conveying equipment—is capable of monitoring individual SKUs as they are stored and moved through the facility.

3PLs now also have the opportunity to record every customer transaction, and track consumer behavior and sentiment. Forwarded to their clients, this data makes possible the ability for retailers to analyze millions of pieces of data, resulting in a real understanding of what its consumers are purchasing, how to get into their online carts, and how to become part of their repeat purchase cycle.

This level of supply chain analytics allows 3PLs to maintain precise control of products through every stage of supply chain handling, from receipt of products to storage and picking, through shipping.

Pick, Pack, and Ship

[E-commerce fulfillment](#) is basically a piece-pick operation, which is historically a hands-on procedure. The right automation facilitates the minimization of manual touch, resulting in more accurate orders, improved ergonomics, lower labor costs and worker travel time, fewer returns, and space saved by operating in a smaller footprint.

Much of the recent investment in automation by e-commerce 3PLs has been driven by a desire to improve order picking, packing, and shipping processes, with a focus on picking. And the most basic form of automation for e-commerce in 3PLs is the augmentation of manual order picking with IT support, such as pick-to-light, hands-free voice systems, zone routing, or dynamic slotting.

In most distribution centers, picking is the most labor-intensive DC function, and usually can provide the most cost-savings when automated. IT-based picking options exist that have significantly lowered capitalization costs, and can exert a sizable positive impact on a DC’s throughput efficiency, while reducing operating costs. For many distribution centers—and especially for e-commerce 3PLs—IT-based picking options can provide the ideal automation solution to streamline their throughput cost-effectively, while realizing a short-term ROI.

E-commerce 3PLs are finding that their clients are progressively requiring shorter-term contracts—where once five-year and 10-year contracts were typical, now three-year to five-year contracts have become the standard. 3PLs need to factor their automation investment for a much shorter ROI, which makes heavily capitalized equipment a poor option.

For dynamic e-commerce picking, highly automated robotic and shuttle-based systems provide accurate and rapid goods-to-person solutions. These systems can achieve performance levels of many hundreds of order lines per hour with precision accuracy. For e-commerce fulfillment within 3PLs, however, it is difficult for these organizations to factor the capital equipment ROI over such a short three-to-five-year span.

Equally important is the scalability of the automation as a 3PL’s client needs increase or decrease, and the flexibility to move the automation for use in a new location, when and if the contract does terminate. This is further pointed up by the fact that e-commerce retailers can fluctuate in their use of 3PLs. Having retained a 3PL to handle their e-commerce fulfillment for several years, a retailer can pull the fulfillment back in-house, then several years later put the fulfillment back out for 3PL bid consideration again. From the perspective of the 3PL operator, the more flexible and scalable the pick, pack, and ship equipment, the better the possibility of achieving their return on investment on that equipment.

The focus on automation for any e-commerce 3PL should be to easily increase fulfillment throughput and SKU density over time. Such a system should enable e-commerce 3PLs to pick, pack, and ship orders and handle returns quickly and accurately, while reducing labor costs and shipping errors, and realize equipment ROI over the life of the contract.

Assessing 3PL Capabilities for E-commerce

Within e-commerce, unpredictability is a constant factor. Flexibility in the 3PL supply chain, therefore, becomes critical. This can be derived from implementing the right software and automated systems that can support the fluidity that e-commerce requires.

3PLs under consideration for handling a retailer’s e-commerce fulfillment should be assessed against the following criteria as to their performance capability. These points represent potential trouble areas in e-commerce fulfillment:

- Large SKU counts, with a high percentage of slow movers.
- Small number of pieces per order.
- Extreme peak season volumes.
- Under-stocking due to unpredictable changes in market demand.
- Front-end order processing.
- Fast 24 to 48 hour delivery.
- High volume of returns from end consumers.
- High potential for brand damage from poor fulfillment performance.
- Real-time, accurate inventory and order visibility.

These points can best be addressed in concert with an independent logistics consultant, who can provide considerable value to logistics executives at both the retailer and 3PL.

The methodology of independent logistics consultants permits an objective examination of all e-commerce options, helping both parties determine underlying costs and design for facilities, automation, and labor within the 3PL. Consultants size the facility based on the retailer’s requirements, the anticipated level of operator cost, and what the 3PL plans to invest, factoring in the optimum level of automation.

Independent consultants draw on solutions from many e-commerce 3PL options used in different applications, thus providing a broad perspective on potential solutions that might otherwise not be considered. This depth of experience can make the critical difference in selecting the right 3PL and equipment that will meet retailers’ requirements for throughput and efficiency, and the 3PL’s need for minimized capital outlay that will deliver the expected return on investment.