

# CSCMP hottopics

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## The Future of Distribution to Support e-Commerce

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### THE PAST, PRESENT AND FUTURE

Everyone is now familiar with e-commerce and the “Amazon effect” in which many retailers have either changed their business models, are now changing their business models or have gone out of business. Parts of the transformation to an e-commerce model have caused retailers to realize:

- typical orders have many fewer SKUs and units
- many more orders per day require fulfillment
- the amount (and therefore cost) of labor for fulfillment has greatly increased
- the cost of shipping has greatly increased due to more shipments
- the number of returns has greatly increased, particularly with free shipping of returns.

The change in retail business models is beginning to force changes in supporting distribution models. Consumers are now expecting very short delivery times in terms of a few days to a few hours. No longer will big retailers be able to operate only a few large distribution centers (DCs) located near the East and West coasts, with one perhaps located in the center of the country, and be able to provide fast and inexpensive shipping. With the continuing growth of low-cost drone technologies, quick delivery of many items within about a 25-mile radius of a DC will be both possible and low-cost. The same anti-collision technologies that are being used in self-driving cars will soon be available for drones so they can operate autonomously in a 3-dimensional space without crashes.

These future changes in e-commerce delivery will force the following changes in distribution:

- DCs will be located about 50 or so miles apart (25-mile radius) in metropolitan areas
- there will be many more, smaller DCs.<sup>1</sup> Some have termed these smaller DCs “velocity centers” or “micro fulfillment centers”
- each of these velocity centers will carry many SKUs but a much smaller inventory of each
- fulfillment of orders from the time of receipt to the time of shipping will be greatly compressed
- highly automated technologies (ASRS and sophisticated robotics) used in large DCs will be cost prohibitive
- lower cost, AI-based technologies that use innovative optimization to make human workers more efficient will be deployed in these velocity centers.<sup>2</sup> Regardless of what some robotic vendors may claim, there will always be a need for human workers

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- omni-channel distribution will change somewhat so that rather than retail handling a little distribution, distribution centers will handle a little retail
- some velocity centers will have showrooms to display a few products but the major space and labor will be devoted to distribution
- a “pull” model for inventory management will support a “flow” type supply chain that keeps a small inventory of each work-in-process unit or finished goods SKU. SKUs will be balanced or normalized using a days-of-supply measure of quantity
- automated systems will be used to advise each node in the supply chain concerning what to order, make or ship<sup>3</sup>
- smaller inventories of SKUs will greatly increase the number of replenishment orders of consumed SKUs
- with more replenishment orders, receiving operations will greatly increase. Events created at retail will be propagated up the supply chain as far as is practical so that each node in the chain can contain minimal inventory and thereby increase responsiveness to the events. *As an extreme example, when a pair of shoes is sold at retail, somewhere in a field a cow should flinch*
- as a result of lower inventories, more frequent replenishment orders and more agile supply chains, stock outages will be greatly reduced.

Naturally, there will be some exceptions to these prognostications but all indications are that e-commerce is heading in the direction described above.

Don't wait too long to take action!

## ABOUT THE AUTHOR

John (Jack) Peck is the President of FastFetch Corporation, a South Carolina company that creates innovative hardware/software solutions for order fulfillment and packaging using a combination of voice output, light directed and wireless barcode scanning technologies. Jack is a retired Professor of Computer Science at Clemson University where he published numerous papers and served as principal investigator on many research projects for such agencies as the National Science Foundation, the Department of Defense and private industry. After retirement Jack incorporated FastFetch and began to transform many of his research results into patents that now form the core of many products offered by FastFetch. FastFetch was the winner of the 2019 CSCMP Innovation Award Competition with its IntelliPack product.<sup>4</sup> See [www.fastfetch.biz](http://www.fastfetch.biz).

## FOOTNOTES

<sup>1</sup> <https://www.supplychainbrain.com/articles/30603-amazon-tests-cheap-warehouses-to-make-holiday-shopping-snafu-free>

<sup>2</sup> <http://www.fastfetch.biz/>

<sup>3</sup> <https://www.balancedinventory.com/>

<sup>4</sup> <https://www.supplychainquarterly.com/departments/20191010-2019-supply-chain-innovation-award-winner-selected/>