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# The Future of Supply Chain Technology



## ■ Trade and Transportation

By *Thomas O'Brien*

Among the more interesting news items from the past few weeks was a report that a graffiti artist named Katsu defaced a six-story billboard in Manhattan. The billboard was a Calvin Klein ad featuring Kendall Jenner. That wasn't the interesting part. The interesting part was how he did it. He used a drone.

Drones have been put into service for military purposes of course but their potential use in other areas is capturing more attention these days. Social commentary on the Kardashians aside, perhaps the greatest potential use is in the area of supply chain management. Amazon CEO Jeff Bezos has stated that delivery by drones will "be as normal as seeing mail trucks."

This position would seem to be endorsed by other industry leaders. The Material Handling Institute (MHI), a trade association serving the MH and logistics industry, recently surveyed 400 supply chain executives about the future of technology for its 2015 Annual Industry Report. That report outlined eight key innovations which make possible customer-driven, next-generation supply chains. Four of these are already in wide scale service: inventory and network optimization, sensors and automatic ID, cloud computing and storage, and robotics and automation. Another two, predictive analytics and wearable and mobile technology, were deemed growth areas. The last two, 3D printing and driverless vehicles/drones, are categorized in the MHI report as emerging technologies.

Emerging is right. Airborne drones are already in use. Germany has approved use of a Parcelcopter delivering drugs and other supplies to offshore locations in the North Sea. Companies such as DHL and Google - in addition to Amazon - have all made investments in unmanned aerial vehicle (UAV)-related R&D. We should also expect to see drones used within the distribution center where they have the potential to be more flexible than forklifts and conveyer systems. The technology has been tested and used for palletizing, sorting, loading, and unloading containers.

Some of the major obstacles to implementation are not technological however, but regulatory in nature. Amazon has been granted permission by the Federal Aviation

Administration (FAA) to undertake drone tests. However FAA Line of Sight rules, which require aerial drones to stay below 500 feet and within the line-of-site of the operator, have hindered commercial UAV development and use.

Other applications are also on the way. Rolls Royce is developing drone cargo ships under a project called Blue Ocean. A fully autonomous cargo ship without a human crew potentially means no living quarters, air conditioning, water or sewage, thus leaving more room for cargo space. For its part, Mercedes-Benz is developing a self-driving semi-truck designed to reduce both costs and human error behind the wheel.

There are risks of course, and the wide ranging use of unmanned vehicles of whatever type will have tremendous implications for society as a whole. The technology can help supply chains be more customer-driven, but the customer has to be comfortable with the technology in the first place. We're not quite there yet.

Regardless of where the technology takes us, there will no doubt be changes to the way supply chains are designed and managed. For those of us in the university, this poses an opportunity and a challenge. The MHI 2015 Industry Report quoted figures from the World Economic Forum in stating that 600,000 manufacturing-related positions in the U.S. have gone unfilled because job applicants lack basic qualifications. With 1.4 million new logistics- jobs expected to be added to the US economy by 2018, the problem will become even more acute unless we as a nation do a better job of matching employer demand with an appropriately skilled workforce.

This means education has an important role to play. But it also means looking at our courses, our professional development offerings, and the kinds of financial support we make available to students for non-traditional, if valuable, training opportunities. Do they prepare students for the workforce of the future?

Answering this question will likely mean changing some standard operating procedures in (and out of) the classroom, but our effectiveness as educational institutions will require us to be a bit more nimble and adaptive, much like the workplaces we hope to prepare our students to enter. But a drone could never replace a teacher, right?

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