

How 3D printing is set to shake up manufacturing supply chains

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3D printing has come a long way in an extremely short span of time. Initially built by Charles Hull in the 1980s as a tool for making basic polymer objects, today, the technology has spurred remarkable efforts in several manufacturing sectors; from building intricate aircraft and race car components, to human organs and prostheses.

Now, the wider business world is beginning to understand the potential of 3D printing for cost-effective, efficient and environmentally-friendly manufacturing.

Though manufacturing in certain locations can be low-cost, managing a global logistics network isn't; especially given the transportation costs involved. 3D printing can reduce these costs by enabling businesses to station local manufacturing centres closer to strategic markets, reducing the length of the supply chain and helping towards a reduced carbon footprint.

Regional manufacturing centres can also tackle inventory concerns, especially for the industrial spare parts and consumer sectors selling highly-customised products. 3D printing technology will enable manufacturers to easily produce goods to order, helping save money and minimise waste.

As the cost of 3D printing decreases, we will see quick-turnaround manufacturing businesses emerge, responsible for providing cheap products such as small replacement parts. 3D printing will eventually relegate traditional manufacturers to only producing highly technical and specialist products. Less specialist products will be manufactured by 3D shops, while cheap one-off manufacturing will eventually be printed by consumers themselves. In the future, simple spare parts, plastic toys or cases for smartphones for example, will primarily be sold globally by downloading a 3D printing file.

In a world of 'next-day delivery' where consumers want products fast, 3D printing will make it possible for businesses to consistently deliver goods in tighter timescales. It will also help to meet customers' growing demands for personalised products. Personalisation is already happening in the clothing and footwear market; consumers can walk into a store, customise items and take them home on the same day. In the future, 3D printing might even be used to build personalised furniture or complex goods like vehicles for same-day collection too.

Besides manufacturing, 3D printing technology stands to change the way third party logistics providers (3PLs) operate, especially those that provide global services. As the technology reduces manufacturers' dependency on 3PLs' distribution capabilities, 3PLs will need to adapt. For that reason, traditional 3PLs could transform into third party printing companies. These new companies would essentially act as value-added distributors and manufacturers; using digital IP design licenses to make companies' products at a local level, and delivering goods on their behalf. Third party printing businesses could offer an additional solution to making the manufacturing industry more sustainable; products made this way will have a smaller environmental footprint due to the reduced physical movement of materials and goods.

Much of what's been outlined is still some time away but it's clear that the potential increased pace of trade brought on by 3D printing and the new industry models that are created will require businesses to re-evaluate their supply chain processes. Manufacturers will need to make their supply chains far more agile and able to operate in real-time to cope with faster product design and production cycles.

There is a concern that this form of manufacturing, in particular with regards to consumer goods, will fuel greater consumption and waste. But the materials used for 3D-printing these goods are mostly heat processed recyclable plastics, making it possible to create a reverse supply chain approach. Customers can recycle used, damaged or unwanted goods by taking them back to their local 3D print shops, so that they can be melted back down and made into something new and useable once more.