

3D Printing and Your Supply Chain

At one time, the concept of 3D printing may have seemed like science fiction. These days, however, the technology is revolutionising how companies across a variety of industries—including engineering, medical, biotechnology, education and manufacturing—are able to design, develop and distribute their products.

An additive manufacturing technique, 3D printing is the process of printing layers of material on top of one another to ‘grow’ a product. This product creation relies on computer-aided design (CAD) files. Stereolithography (STL) software reads the CAD file and uses a material—such as paper, powder or metal—to print the shape. As the technology has evolved, the number of printing materials has evolved with it and currently includes thermoplastics, edible materials, rubber, clay, porcelain, metal, ceramic powders, plaster, paper and even human tissue.

While 3D printing has encouraged widespread innovation in development and design, it has been equally disruptive to supply chains, as the technology provides companies with the ability to produce bespoke items in-house. However, with the right preparation and knowledge, your company could not only

protect its supply chains from disruptions brought on by 3D printers, but bolster them.

How 3D Printers Affect Supply Chains

Supply chains are intricate networks of individuals and organisations which work together to transform and transport materials and products. These systems have remained nearly unchanged for decades despite modern innovations, making them time-consuming and ripe for disruption.

By 2018, 65 per cent of supply chain professionals will have invested in 3D printing, according to a recent study published by Gartner, an international research firm.

As 3D printing technology has become readily accessible, it has placed pressure on supply chains to simplify. By adopting the technology, your organisation could drastically streamline its supply chain. For example, by creating a small, simple component for your product using an in-house 3D printer rather than relying on a cheap manufacturer in another country, you

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could save money and shorten your supply chain.

Using 3D printers to supplement your supply chains makes them more flexible, which allows your organisation more ease to meet new challenges. For example, if a supplier goes bust, you may be able to replace that supplier's product by 3D printing it yourself. 3D printing can potentially make your business more self-sufficient and less reliant on distant suppliers.

3D printing can also hasten your manufacturing firm's lead time. Instead of waiting weeks for components, your supplier may be able to send electronic blueprints directly to you or local 3D printers, where they can be printed in a matter of hours. This helps you be more reactive to customer demands and eliminate lengthy lead times for the sake of low prices.

Risks of 3D Printers to Supply Chains

While 3D printers have the potential to supplement multiple areas of your company's supply chain process, they are not without risk. The following list of risks is not exhaustive, but does highlight some of the biggest risks your organisation could encounter:

- **Design and intellectual property infringement:** A company or individual could acquire unlicensed versions of your company's design files and produce their own copies. Or, a company or individual could replicate one of your company's licensed designs and produce their own copies with a 3D printer.
- **Quality of the raw printing materials:** Depending on the quality or type of raw printing materials, the product could be flawed and unsafe.
- **Brand reputation:** If the 3D printer is calibrated incorrectly or if the raw printing material is of poor quality, your company may risk distributing defective materials and/or products, which could then damage your company's reputation.
- **Unclear supply chain network:** 3D printers used within your supply chain could make it difficult to discern the origin and quality of the materials and/or products, exposing you to regulatory risks.
- **Product liability:** If a 3D printed product that your company produced and distributed failed, and caused an individual to sustain injuries, you may be held liable.
- **Employer liability:** As with any piece of machinery, the improper use of a 3D printer and/or the mishandling of its materials could expose your employees to risks. For example, some of the raw printing materials are powder-based, and if they are improperly handled, your employees could potentially develop respiratory problems.
- **Fire damage caused by the heat generated from the machine:** While the 3D printer completes its task, it could

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become very hot, creating a potential fire hazard.

For some of these risks, there is still uncertainty regarding who would be at fault in the event that a 3D printed item would fail. The responsibility could lie with the 3D printer manufacturer, the material supplier, the designer of the design file or your company—the law at this time is unclear.

Mitigating 3D Printing Supply Chain Risks

Using new technology always comes with new risks. Realise the supply chain benefits of 3D printing while managing your risk by adopting these five strategies:

1. Provide your employees with safety training on operating 3D printers and transporting raw printing materials. Also, offer your employees further training each time you develop a new printed material and/or product as well as when you begin using a new raw printing material.
2. Examine your current supply chain process to identify where a 3D printer would be the most effective. After you have decided where to integrate the technology, ensure that the entire process still emphasises flexibility, efficiency and safety. Also, review your supply chain management plan at least annually.
3. Research raw printing material suppliers to ensure that they are reputable and that you can trust the quality of their product.
4. Test a significant sample size from each batch of 3D printed items to ensure that there are no defects or flaws.
5. Review your product liability cover and product recall policies to ensure that they are robust enough to include 3D printer-related incidents. Review these with **Crendon Insurance Brokers Ltd** to close any potential gaps in your cover and ask any questions.

Simplify Your Supply Chain, See the Rewards

With careful planning, 3D printing can streamline your supply chain. However, the technology is not a cure-all, and should be used alongside a comprehensive risk management plan that emphasises flexibility and efficiency. For more information on improving and protecting your supply chain, contact **Crendon Insurance Brokers Ltd** today.