

THE IMPACT OF BLOCKCHAIN ON THE MANUFACTURING INDUSTRY

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The world is abuzz with discussions about “Blockchain.” You might have even started to wonder whether Blockchain could change the way the manufacturing industry does business, but are not exactly sure what or where to begin asking questions. Read on for answers to some key questions about this revolutionary technology and its uses in the manufacturing industry.

What is Blockchain?

Generally, Blockchain technology provides a distributed and open recording system that removes the need for a centralized authority such as banks or government officials. Blockchain technology centers around transactions. While a Blockchain transaction may be a purchase

using currency for goods or services (such as a bitcoin transaction), it actually is any type of transaction or exchange that can be expressed in an “if-then” equation. For example, a Blockchain transaction may be, “If the warehouse stock of legal pads drops to under 50 units, then place an order for 1,000 more units.” Or it may be, “If the shelf stock of ground beef in the store contains packages with control numbers 12345 through 13456, then pull the product for potential salmonella contamination.” Each user within the Blockchain retains a complete copy of all transactions performed within it and verifies any new transactions as legitimate before being added. That means all the users in the network can pull up a full record of all

transactions without going to some other authority.

The reliability of Blockchain information means transactions of any type will see increased transparency, faster and easier methodology, heightened trust, and an unalterable record that is difficult to falsify. Blockchain will undoubtedly change every industry, including the manufacturing industry. To understand the possibilities of this technology, it is important to review the successes of Blockchain so far. For example, Blockchain has become increasingly popular in the food industry for improving product safety. The technology has also become accepted in the health care industry for managing sensitive information about patient health.

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How Have Companies Successfully Implemented Blockchain in the Food Industry?

Retailer Walmart has swiftly adopted and taken advantage of the potential of Blockchain technology. The company uses IBM's Blockchain technology to improve its processes for identifying and recalling contaminated foods. Like most grocers, Walmart's old practice had been to preemptively remove food from its shelves that may or may not have been contaminated. However, IBM's Blockchain technology now independently verifies an array of information about a particular Walmart food product, including the time and place

administration ("FDA") compliance much easier. The FDA mandates that manufacturers use a unique device identification system ("UDI") that identifies medical devices throughout the entire process of manufacture, distribution, and use. Blockchain technology makes manufactured medical devices completely traceable, as the UDI system requires. If a device malfunctions, the FDA and other regulatory agencies will investigate to determine who is responsible. Because Blockchain tracks and validates each step of the manufacturing process, it will be much easier to determine which subcontractor's part was the component that failed.

ed at just the right time. But when a product needs to be recalled, it may be hard to perform root cause analysis and trace the problem to the specific component and the supplier who manufactured the component. Thus, the manufacturer must recall more items than may actually be implicated and the timeline for conducting this analysis is often lengthy.

Not so with Blockchain. Just as with a medical device, the design and building process of anything manufacturers might be creating is recorded every step of the way. Thus, Blockchain technology will force subcontractors for parts, components, and software to remain accountable

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it originated; environmental conditions; and other circumstances that may impact the quality and safety of the food product. The technology has sliced the time it takes to track details about Walmart's produce from six days to a mere two seconds.

Blockchain technology saves time and money, improves food safety, and greatly reduces food waste. No wonder merchants are excited about Walmart's experiment, seeing possibilities for areas including order fulfillment, procurement, and inventory control.

How Has Blockchain Revolutionized the Medical Device Industry?

With its security and trustworthiness, Blockchain technology is ideal for an industry that depends on precision and accuracy, such as the medical device industry. Blockchain can help secure HIPAA-protected, patient-specific information on devices and can help certain devices share their data as needed while keeping it private and secure. Furthermore, Blockchain can assist in permanent record-keeping of the development, design, production, part sourcing, and distribution of each and every device, making Food and Drug Ad-

How Does the Manufacturing Industry Fit In?

When we look at the examples of Walmart and the medical device industry, the possibilities of Blockchain in the manufacturing industry appear endless. First, Blockchain can revolutionize the way a manufacturing company tracks a widget or component along a complex supply chain. Distributed tracking through Blockchain traces the widget each time it moves from step-to-step along the supply chain, recording the whole product journey and facilitating communication between departments along every step, all the while keeping product records safe and organized. Even if one set of records is altered or destroyed, Blockchain's distributed system will retain the widget tracking information, preventing a breakdown of the supply chain and keeping manufacturing lines moving.

Blockchain can further assist manufacturers in investigating and responding to product failures. As we know, no one obtains parts from just one supplier. Multiple parts may come from one supplier, or a single part may be provided by many suppliers – whoever has the amount need-

ed for their roles in an item's manufacture. The immutability of the data hosted on the Blockchain provides a key advantage for this process. With Blockchain, a manufacturer will know exactly which of its manufactured products contains the malfunctioning part or component. Taking a cue from Walmart, there is no more need to recall 10,000 products when only 1,000 actually have a problem.

What's Next?

Blockchain may truly revolutionize the manufacturing industry. In some ways, we have barely scratched the surface of Blockchain's potential. The powerful verification and storage abilities of Blockchain can transform product safety and alter the needs for auditing and tracing. Many industries are currently exploiting Blockchain technology to make their products safer and more reliable, and the manufacturing industry will be no different. So the question is not whether we will see Blockchain uses within the manufacturing industry; the real question is which manufacturer will lead the charge in our Blockchain-enabled society? ♦

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