Traditional Supply Chain Challenges During COVID-19 Spur Innovation in Blockchain Applications

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Before the onset of the COVID-19 pandemic, companies were already exploring the promise of blockchain to modernize certain aspects of their supply chains. Traditional supply chains can be inefficient, data intensive and costly, often characterized by burdensome paperwork, conflicting records and delays resulting from manual reconciliation processes involving a series of transactions and document exchanges among multiple parties. Blockchain offers potentially substantial benefits in this context, including the secure and auditable validation of transactions, automated documentation to support legal and customs compliance, improved quality control, enhanced end-to-end transparency (e.g., for verifying sustainability or ethical sourcing standards), and overall improvements in efficiency and cost-control. Indeed, ever since news reports in 2018-19 that Walmart had successfully tested a [blockchain platform for food traceability and accountability](#) to track mangoes and other products through the supply chain, entities have been looking in earnest at, and investing in, blockchain solutions targeting the supply chain. Indeed, Walmart has continued to invest and conduct trials of blockchain solutions, having recently announced in August the [promising results of Walmart Canada's use of blockchain technology](#) to reduce inefficiencies and invoice disputes for freight and trucking payments.

Blockchain applications in the supply chain to date have largely been in the testing or pilot phase, however, due to the complex array of necessary considerations. As a preliminary step, companies seeking to leverage blockchain solutions need to assess blockchain's potential applications and advantages, the practical aspects of transitioning away from legacy systems, and the legal and operational issues associated with the use of blockchains. Before going live, participants in a private blockchain must first understand and be satisfied with how the blockchain will be implemented and administered, including, for example, which parties will be responsible for maintaining the blockchain, which data will be stored "on-chain" or "off-chain" to achieve the desired functionality without compromising the confidentiality of certain proprietary data, and how cybersecurity and data origin integrity issues will be handled. In many situations, an overarching written legal agreement among the various participants is necessary to ensure clear and robust governance and to address key legal issues. Also, testing a blockchain solution in the supply chain context is necessarily a collaborative affair (e.g., it may involve assembling a consortium) because a working platform that delivers business value in a supply chain will require participation by the various players in the ecosystem. This can raise [antitrust compliance considerations](), requiring careful structuring. Thus, while there was optimism in using blockchain to bring the supply chain into a new digital age before the pandemic, many organizations felt that implementation could wait. However, the COVID-19 outbreak has spurred changes in that mindset.

The impact of COVID-19 has shown that [traditional supply chains are not always resilient or adaptable enough to handle a pandemic](#) or another widespread disaster. During the pandemic, for example, many companies have suffered serious supply chain disruptions, perhaps most acutely in the healthcare sector, which was disrupted by shortages of vital medical equipment and supplies. In the early days of the pandemic, affected companies had to make rapid decisions to resolve supply chain issues, but in many cases such efforts were stymied by the inefficiencies of traditional systems, where real time data needed to diagnose the problem and find new supply chains may not have been available or reliable. Even during the best of times, the data on a supply chain may reside with numerous parties and may not be passed accurately along the chain. Such issues are in addition to any regulatory hurdles from government agencies, which themselves likely were short-staffed or affected by the crisis. Thus, as the supply chain issues became highly pressing, companies struggled to solve provenance issues or conduct adequate due diligence on new suppliers (particularly those new manufacturers who pivoted from another industry to produce goods needed to fight the virus). As a result, many businesses found themselves unable to onboard alternative suppliers and perform contractual obligations.

Given that other events of similar impact are likely to occur in the future, many companies are seeking to mitigate current and future disruptions by rethinking their supply chains, whether by diversifying, "near-shoring" or looking to adopt a blockchain solution.

Since the outbreak, there have been reports of blockchain research and implementation to resolve stubborn supply chain issues. For example, blockchain was looked at for applications in the early days of virus response, such as helping to connect medical providers with needed equipment during the COVID-19 outbreak and potentially produce reliable COVID-19 immunization passports stored on a blockchain, and even using the technology to prevent price gouging. On a related front, blockchain-based contract tracing apps are being developed to enhance privacy protections of mobile users by storing digital information in a cryptographically secure manner. As for implementation, in late April the Rapid Supplier Connect blockchain network was launched to assist government agencies and healthcare entities with finding new suppliers and excess inventory to procure supplies to fight the virus, as well as vetting and onboarding new suppliers. Similarly, Rapid Medical Parts was created when a company leveraged its existing blockchain network, VeriTX, for the buying and selling of digital assets, to establish a new blockchain platform that allows customers to custom order parts needed for medical devices. It was also recently announced that the U.S. Air Force has been funding a project to employ blockchain to modernize its supply chain and procurement processes; the Agriculture Department, in a proposed rule about bolstering organic food certification, also expressed its opinion that digital ledger technology will play an essential role in supply chain traceability. Moreover, members of the Congressional Blockchain Caucus wrote a letter in April to the Treasury Secretary urging the department to explore blockchain and distributed ledger technology to help streamline the process of sending stimulus payments and other government aid to recipients and another letter in September to various agencies imploring the government to establish a digital infrastructure to modernize crucial supply chains. And in the trade finance arena, a Japanese bank recently announced that it had joined two trade finance blockchain consortia. Interestingly, the bank noted that, due to remote work arrangements following COVID-19, it was seeing issues in the document-intensive trade financing process, compelling a trend toward digitalization.

It follows that blockchain will be a part of the modernization of supply chains, and that investment and testing in existing or new applications will likely be a higher priority going forward. As we see consortia successfully conducting tests of new supply chain platforms, there is growing consensus that a permissioned blockchain platform that connects vendors, customers, shippers, government agencies and other players can work to bring needed transparency and efficiency to the process of goods moving throughout the distribution chain.

As society moves toward Industry 4.0 – characterized by the greater implementation of automation, IoT, big data, smart solutions and data exchange – blockchain seems to have earned a spot in the next digital revolution. With COVID-19 having laid bare the weaknesses of the traditional supply chain, the use of blockchain to modernize the supply chain seems likely to increase, as businesses see firsthand the benefits of smart manufacturing and smart distribution.

For deeper insight into the legal and practical issues in blockchain and supply chain, please see our Practice Notes, *Blockchain and Supply Chain Management* and *Best Practices: Smart Contracts*.

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