

Lex Mundi Blockchain White Paper Series

Supply Chain DLT and Token Legal Considerations

by [John Levonick](#) and [Todd Kornfeld](#), Pepper Hamilton LLP (Lex Mundi member firm for USA, Pennsylvania)

Leveraging blockchain technology to enhance supply chain logistics in the retail food industry is a prime business case for the many economic and public policy benefits that this new technology platform presents and that outweigh the perceived legal challenges of this new and growing technology. Deploying blockchain technology within the global food supply chain should fulfill the ultimate promise of blockchain by creating increased traceability of food products, resulting in improved efficiency, sustainability, provenance and safety, and collectively leading to broader access to affordable food globally.

From seed to plate, blockchain technology will replace disparate enterprise resource planning tools and manual documentation to create a comprehensive and traceable data set, which records the specific seed planted, food or raw material harvested, location of where it was transported, and wholesale and retail delivery, all the way through to the consumer taking possession. The use of supply chain blockchain technology is designed to order, fulfill, ship and make payments upon, as well as record, transactions in a transparent manner. This is expected to create significant time and cost efficiency, as well as supporting the health and welfare of global citizens.

The legal community has identified concerns about blockchain technology, specifically with respect to effectively applying well-established principles of law to anticipate the outcomes of disputes and issues that will arise in blockchain supply chain management. However, considering that blockchain is a relatively new technology, identifying how traditional legal issues may arise through the use of blockchain within the supply chain and logistics industry, in light of the comprehensive history of administrative, legislative and judicial determinations in our legal system, should not present itself as an

insurmountable hurdle that would otherwise impair the ultimate value proposition of blockchain technology. In fact, using blockchain technology might prevent the circumstances that traditionally lead to legal disputes and might reduce potential third-party liability.

Smart Contracts to Solve Bill of Lading Issues, Reducing Spoilage, Waste and Loss

The legal status of parties within the intermodal shipping of goods into the U.S. via rail, ocean and truck is a hot-button item for litigation due to ambiguous, sloppy and intentionally vague language within bills of lading and shipping documents.

Bills of lading can contain many pieces of information, including the identification of the parties, the description of freight (including freight class identification), purchase orders or special referenced numbers, designation of tariffs, and additional comments, special instructions or considerations that may reflect the mutually agreed-upon responsibilities of the parties. In the event of a failure of performance, accounting for financial liabilities (e.g., tariffs) or any loss or damage, importers, exporters and insurers may battle over payment, remuneration or indemnification for the failure to perform. In addition to any failure to perform, delay in performance leading to loss, or a catastrophic loss, will result in significant financial exposure that may lead to indemnification claims, liability determinations, as well as questions surrounding what may be the appropriate or applicable jurisdiction and the controlling law.

Smart contracts, through a blockchain, can solve issues caused by poorly drafted bills of lading that would otherwise lead to significant litigation and, at times, unintended parties bearing the brunt of the liability, resulting in significant, albeit unexpected, economic loss. The use of smart contracts on a permissioned (limiting access to identified parties) blockchain will provide for a uniform level of security that will be cryptographically superior to the general electronic transport records provided by the Rotterdam Rules¹, reducing loss through hacking and the alteration of key terms to a shipment. Smart contracts, when part of a larger supply chain and blockchain logistics platform that delivers goods to retail channels, will collectively improve the cost of transportation and solve the lack of visibility and inefficiencies within the existing paper-based bill of lading process. This lack of visibility combined with inefficiencies creates a lack of predictability in product pricing and time of delivery. Using smart contracts with blockchain technology may result in better predictability regarding the availability of goods, less waste, reduced costs and ultimately better retail brand management and profitability.

Food Provenance and Fraud

A key benefit of leveraging blockchain technology in the retail food supply chain is its use in addressing food fraud, including ethical and fair trade considerations. By exposing their supply chain to the public, food and beverage companies can give more complete assurance to retailers and buyers regarding the specific origin and authenticity of the product. Consumers can look into the source of frequently feigned or adulterated foods, such as fish, honey, olive oil, meat, coffee and organic products, among others. Blockchain technology can fulfill societal governance considerations of ethical harvesting and fair trade, as they are key to supporting

¹ On December 11, 2008, the UN General Assembly adopted the "Convention of Contracts for the International Carriage of Goods Wholly or Partly by Sea" during a signing ceremony for the Convention, which was held in Rotterdam, recommending the new Convention to be known as the "Rotterdam Rules". The Convention extended and modernized the existing international rules relating to contract of maritime carriage of goods. The goal of the Convention is that the Rotterdam Rules will replace The Hague Rules, The Hague-Visby Rules and the Hamburg Rules and that it will achieve uniformity of law in the field of maritime carriage.

and remunerating the relevant participants that seek to follow the appropriate grow, harvest and manufacture sustainability requirements that support a product or the means for which the product came to market. Blockchain technology can give consumers confidence in the ultimate product, specifically the ethical means by which it was grown or harvested, and blockchain can assist in justifying potential premium price tags associated with rare or high-demand products. Blockchain can help show that organic food really is organic food.

Tracking and Traceability: Food Safety in the U.S.

In the U.S., we have had recent experiences with very large recalls of romaine lettuce contaminated with e. coli.² These recalls were extensive and very expensive for the industry because no one was able to trace the contaminated lettuce back to its source. Starting in September 2019, as part of a new food safety initiative, a major U.S. retail giant will require suppliers of certain fresh, leafy greens to implement real-time, end-to-end traceability of product back to the farm using blockchain technology.³ This business requirement will become part of the retailer supplier agreements, in an effort to speed up response times in the event of foodborne illnesses and recalls. Having the ability to trace the food from your fork back to the specific farm location, lot number and the actual harvest date creates a level of transparency that the retail industry has never seen before. This specific retail giant is not waiting for the U.S. Food and Drug Administration to promulgate regulations implementing the particular aspects of the Food Safety Modernization Act (FSMA) that will mandate this traceability; they are taking it upon themselves to create accountability, via transparency and traceability, to build consumer trust in retail food delivery through the use of blockchain technology. FSMA was enacted in 2011 to transform the nation's food safety system by shifting the focus from responding to foodborne illness to ultimately preventing it. However, for key portions of FSMA including the safety of produce, final regulations have not yet been adopted. FSMA requires various steps, including supply chain risk management procedures and traceability, foreign-supplier verification, and ensuring and documenting appropriate temperature controls during shipment. It would seem likely that other large retailers and food manufacturers will implement such systems, and they may pressure their suppliers to implement such systems. End-to-end support for blockchain technology within the food supply chain may be coming. These changes are also likely to be driven by product liability issues, and who is ultimately responsible for contaminated food.

Improved Market Data

The use of blockchain technology, combined with other technology platforms, may result in increased transparency for suppliers as to who their customers really are. For example, if blockchain food supply chain technology were combined with scan data from retail customer loyalty cards, it might be possible for the farmer in the field to know exactly where and to what kind of customer their produce is being sold. That could be a powerful tool for market research, although there are obvious privacy concerns that will need to be addressed, some of which may raise novel legal issues.

Conclusions

The economic and public policy reasons for leveraging blockchain technology in retail food supply chain and logistics clearly outweigh potential legal concerns, which can be dealt with as they arise. Blockchain will ultimately increase traceability of the food we all eat for efficiency, sustainability, provenance and safety — ultimately leading to broader access to affordable food globally. From seed to plate, blockchain technology will

² <https://www.supermarketnews.com/food-safety/fda-cdc-narrow-romaine-lettuce-warning>

³ <https://www.nytimes.com/2018/09/24/business/walmart-blockchain-lettuce.html>

replace disparate and inefficient enterprise resource planning tools and manual documentation used by farmers, fisherman, manufacturers and transportation and logistics companies to create a comprehensive and traceable data set. The data will identify inefficiencies across parties to give the transparency and business intelligence necessary to refine and enhance the farm, harvest and transport processes that currently may lead to delays and waste and unsafe food. The data will tell the story of the specific seed planted, food or raw material harvested, and location of where it was transported, through wholesale and up to retail delivery to the consumer. Blockchain technology should improve food transparency and safety for all of us. It may also reduce certain legal liabilities and concerns, while creating or increasing others.

For more information, contact bd@lexmundi.com.