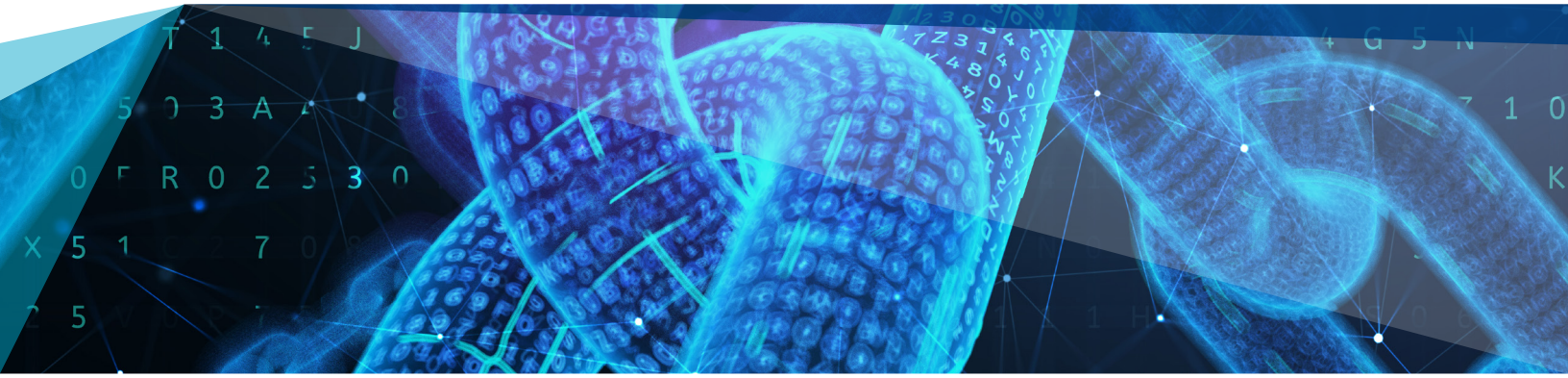
FOOD FOR THOUGHT

MAPPING THE FOOD AND BEVERAGE SUPPLY CHAIN WITH BLOCKCHAIN



The recent *E. coli* outbreak in romaine lettuce has resulted in five deaths and illnesses in nearly 200 people across 35 states as of June 1, according to the Food and Drug Administration (FDA), but the exact source of the problem has yet to be identified. This is just one example of why transparency along the food and beverage supply chain is important.

Between 2012 and the fourth quarter of 2017, the number of food products recalled by companies regulated by the FDA nearly doubled, according to Stericycle. Bacterial contamination — like the species of *Salmonella*, *E. coli*, and *Listeria monocytogenes* — and undeclared allergens were the most common reasons for these recalls; in the fourth quarter of 2017 (see Figure 1).

But advancing technology holds promise to reduce the opaqueness that is often associated with food and beverage companies' supply chains. More specifically, the food and beverage industry is looking to blockchain technology to improve transparency — whether it's for food and public health safety purposes, streamlining a multitude of supply chain processes, or both.

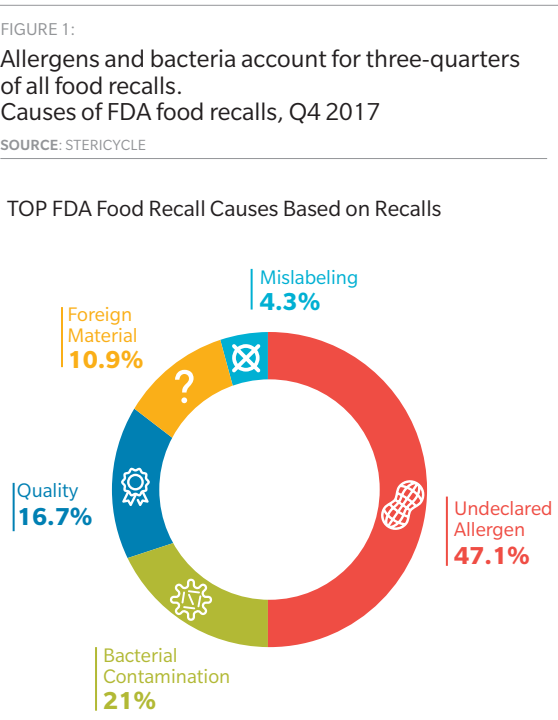
BLOCKCHAIN'S POWER

Blockchain is digital recordkeeping technology, built for securely and seamlessly sharing data. Rather than being stored in one place, data is "distributed" on an open, peer-to-peer network. Records can be reviewed or added to by many users, but never deleted or altered — creating a permanent data log that can easily be tracked and referenced.

FIGURE 1:

Allergens and bacteria account for three-quarters of all food recalls.
Causes of FDA food recalls, Q4 2017

SOURCE: STERICYCLE

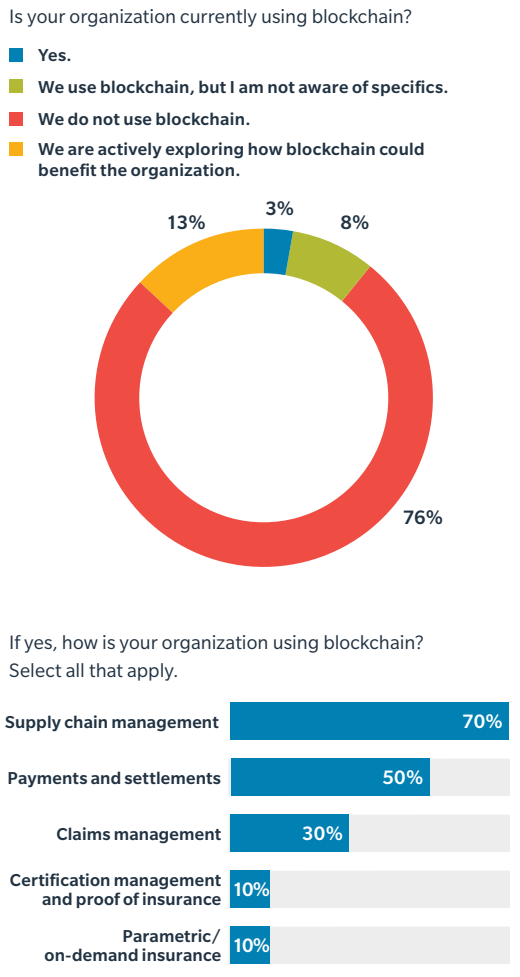


Although only a few companies are currently using blockchain, the primary area of focus for those users is supply chain management, according to Marsh's Excellence in Risk Management survey (see Figure 2). For the food and beverage industry, blockchain can allow manufacturers, processors, and distributors to trace any product — and even its ingredients — back to their origin, sometimes within seconds. Digital encryption, GS1-compliant global trade item numbers (GTIN), or SKU numbers are assigned to each transaction point on a food or beverage item's journey from farm to fork or manufacturing facility to table. The tracking process can also help glean information like farming practices, harvest data, and even the temperatures of trucks that products travel in to help ensure product safety.

FIGURE 2:

Blockchain remains outside the toolbox of most risk executives

SOURCE: 2018 EXCELLENCE IN RISK MANAGEMENT SURVEY



While still an emerging technology, particularly in the food and beverage industry, blockchain has shown enough promise that nine food manufacturers and retailers agreed to form a pilot project in 2017 that studies and tests how it could impact the supply chain. The major driving force behind adopting blockchain — and increasing transparency in the supply chain — is food safety. Being able to quickly identify the source in the supply chain where a product was affected is critical to controlling and perhaps even preventing outbreaks of foodborne illness.

In turn, businesses can better protect their reputations and stave off the many financial losses that might stem from recalling a food or beverage item if the source of contamination is unclear. For instance, as a mere precaution, food and beverage companies might have to discard non-contaminated items — that could otherwise be sold — if they can't verify with certainty that they are safe.

Beyond food safety and public health, the added benefits of blockchain in the food and beverage industry include:

- Reduced paperwork relating to supply chain operations.
- Digital certification tracking for the Global Food Safety Initiative certification and others.
- Automatic invoice discrepancy resolution.
- Improved supply chain management operations.

TECHNOLOGY AND RISKS STILL DEVELOPING

There can be limitations to blockchain's value. In order for all parties to truly benefit from blockchain, all stakeholders must ultimately adopt the technology, regardless of their position in the supply chain. If all suppliers are not on the blockchain, traceability is hindered, minimizing its effectiveness.

And getting all suppliers on the blockchain may not be easy. Not all may have the resources to invest in it. Even if all suppliers are using the blockchain, they might not be using the same technology providers — or integrated providers — leaving gaps in the system. Without that consistent approach, transparency won't ensue. So individual companies must consider whether it's worth the investment if other stakeholders don't follow suit.

Such logistics aren't the only pain points associated with blockchain. Because the technology is still emerging, so are its risks. The exact threats blockchain presents are unclear at this early stage, but it is natural to presume that cyber risks exist. While encrypted blockchain data are considered highly secure, hackers have had plenty of success accessing systems previously thought impenetrable, so cyber risks can't be ignored.

And as blockchain is increasingly adopted and becomes even more sophisticated and embedded within businesses, the risk could actually compound. The eventual heavy reliance on digitized supply chain management, instead of heavy reliance on people, could make any disruption to the technology that much more damaging to a business and its continuity.

Revolutions don't come without risk. Although blockchain is still a developing technology with many unknowns, it offers the promise of efficient and transparent supply chains. In the long run, those food and beverage companies that can master blockchain can ultimately gain deeper insights into their supply chains, while those that don't adopt it may lag behind their competitors.

This briefing was prepared by Marsh's Food & Beverage Practice, in conjunction with Marsh's Global Risk & Digital Practice and Tyson Foods, Inc.

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