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Blockchain Technology for Food Industry

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In this article, we'll analyze the benefits of blockchain technology in the food industry and examines some of its practical trials in the real-world.

The food industry has been under pressure recently. There are growing concerns about the safety, quality and transparency of the supply chain, as well as the environmental impact of food production. And this is just the beginning: the global population is growing and so is the demand for food.

At the same time, the world faces a number of challenges including climate change, water scarcity, and pandemics. How can we meet the needs of a growing population while preserving our planet? And can the much-advertised [blockchain technology](#) be helpful in this area? Let's discuss all the pros and cons.

Supply Chains Management

Blockchain has long been used for supply chain management. The food industry is ready for blockchain technology, too. From farmers and grocers to restaurants, blockchain has the potential to improve food safety, reduce costs, and increase transparency.

For many companies in the food industry blockchain can be a game-changer. It can help track the origins of every ingredient in your food, from farm to table. It can also be used to create a transparent and secure record of transactions between the supplier and customer.

It can also operate as a virtual bank in the B2B sector, helping companies to move money, receive deposits, finalize transactions, and more. In this case, businesses can avoid intermediaries in contrast to internet banking which is subject to regulation, surveillance, business hours, and other limitations. This is a huge advantage for the food industry, which has been struggling with recalls and contamination scandals in recent years.

Apart from that, blockchain has already begun to revolutionize the food sector at a rapid pace. According to Gartner's study, even in 2019 the largest companies, such as Unilever and Nestlé, were already interested in [decentralized](#) technologies. The analysts, therefore, assumed that over 20% of the groceries will use blockchain by 2025.



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How Blockchain Is Applied in Food Industry

An expert analyzing blockchain in the agriculture and food market for Statista assumed that the total market cap of decentralized projects within the area is set to expand from \$32.2 million in 2017 to \$1.4 billion by 2028.

Here are just a few examples of how blockchain could be beneficial for groceries and other venues within the sector:

- Tracking food items throughout the supply chain from farm to table;
- Providing transparency in the supply chain;
- Ensuring accurate and up-to-date record-keeping;
- Improving communication between different parties in the supply chain;
- Reducing the risk of fraud and corruption;
- Improving food safety and quality;
- Protecting the environment.

In the past, supply chain management has been a manual process that is prone to error. Blockchain technology can automate this process and make it more efficient. For example, blockchain could be used to track the movement of food items throughout the supply chain. This would allow for real-time tracking of food items and would help to reduce waste and improve efficiency.

The Business Outlook of Blockchain Technology in the Food Industry

Blockchain has even more potential when combined with cutting-edge data-gathering technologies. It may revolutionize the food industry by involving the advantages of the Internet of Things (IoT). IoT links the physical and digital realms, capturing information such as temperature and humidity throughout product transportation and storage. Blockchain creates a secure and unalterable platform for storing and providing access to this data.

In fact, blockchain technology has already been implemented in the food sector by a number of IT giants. IBM's Food Trust and Watson platforms, as well as SAP's Track and Trace, and Oracle's Intelligent Track and Trace are just a few examples.

Juniper Research predicts that, in the next decade, blockchain will be used to connect IoT sensors and trackers. Firstly, it can cut costs for retailers by eliminating bottlenecks in the supply chain. Secondly, it may minimize costs for manufacturers, as it can reduce delays and increase reliability. Finally, due to its transparency, it eases regulatory compliance and improves efficiency. As a result, the food recall procedure will become much faster. This innovation could save \$31 billion for the industry, Juniper Research claims.

According to the Food and Agriculture Organization of the United Nations outlook, blockchain technologies can be used to create an irreversible contract among various participants in the supply chain, resulting in more transparency within the system. A smart contract may minimize the number of intermediaries in the network, thus lowering costs, enhancing margins and efficiency, and, as a consequence, handing a large portion of profits to the farmer or producer.

All the above-mentioned innovations can contribute to the immense growth of the whole sector. According to the 2021 report, the blockchain share in the agriculture and food supply chain market is expected to grow by 47% in the coming years. While in 2021, the evaluation of the blockchain projects in the area was somewhat around \$190 million, by 2025, it can probably reach \$886 million.



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Typical Use Cases

As you can see, since 2019 there's been a considerable increase in businesses that have implemented blockchain technology in their food supply chains. Let's see some real-life use cases to understand how it's actually working.

Walmart has been using blockchain technology to digitize its supply chain and cut down on the time it takes to determine where food poisoning begins. In 2020, an E. coli outbreak stretched across 19 states and led to 20 people being hospitalized. The trace led to lettuce that was sold in the groceries across the US. The sector spent millions of dollars warning customers as well as tracking and removing contaminated veggies from the market after the cases were discovered.

Walmart has mandated that all leafy green vegetable suppliers use blockchain to keep track of production. In the event of batch contamination, Walmart can now trace tainted food back to its source in seconds rather than weeks. This is especially important during product recalls.

Nestlé traced the origins of its Rainforest Alliance certified coffee brand Zoégas using blockchain. The brand delivers its own certification data to assure the product's origins and sustainability practices, enhancing trust and transparency. Customers may look up information on farmers, harvest dates, roasting periods, and even check transaction certificates for their coffee's individual shipment by scanning a QR code on the packaging.

Carrefour, one of Europe's major retailers, is benefiting from blockchain by tracking its free-range chickens. They also allow customers to follow the process from start to finish, knowing simply where and how the chicken was acquired. Currently, Carrefour wants to utilize blockchain in food and drink products, such as milk, salmon, tomatoes, eggs, honey, and so on.

Bumble Bee Foods has implemented blockchain to improve traceability and deter fraud in its yellowfin tuna operations. The system follows the fish's journey from the moment it is captured to when it is sold in shops. Customers can access information on where the fish originated, who caught it, and how big the catch was, similar to Nestle's program on coffee. Information about fair trade is also provided, giving customers assurance that their money is not going to finance unethical activities such as slavery or child labor.

Challenges Ahead of Blockchain Adoption

The future always looks bright with decentralized technologies. However, before blockchain can be widely adopted by the food industry, some major challenges need to be addressed.

One of the main goals is to ensure that all parties in the supply chain have access to the blockchain platform. This includes farmers, manufacturers, distributors, retailers, and consumers, who have to be trained to interact with sophisticated IT solutions.

Another challenge is to develop high quality standards for how data is stored on the blockchain. This will ensure that information is consistent and can be easily accessed and analyzed.

Finally, blockchain technology is still in the early stages of development and needs further testing before it can be widely adopted. However, the potential benefits of using blockchain in the food industry, and the expected market share, are too important to ignore.