BLOCKCHAIN IN FOOD PRODUCTION SECTOR

A Quick Summary

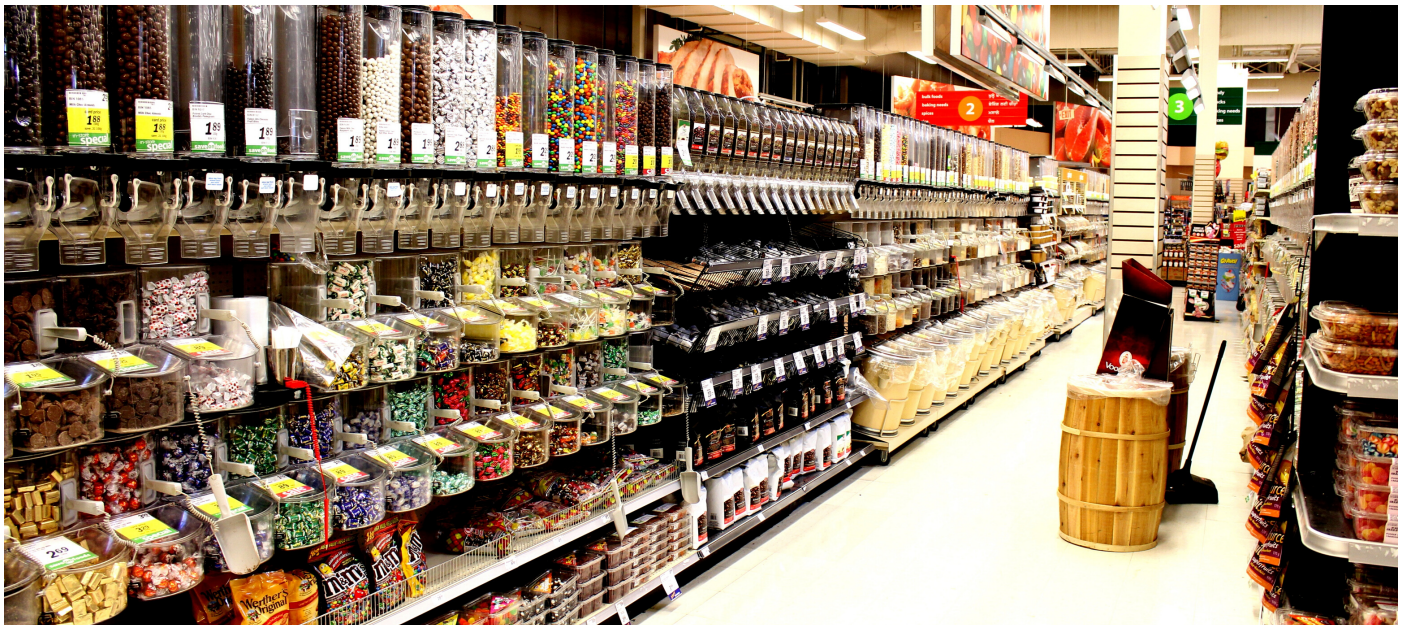
CryptoIndexSeries

FOOD PRODUCTION

The value drivers for the food sector are evolving and shifting with the changing demands of consumers and the advancements in technology.

Transparency, safety and traceability are 3 key concepts among others that require further attention from food retailers as pointed out by studies. According to a recent report by Deloitte, the demand for transparency is increasing in Food Sector and customers are becoming more health-conscious. They not only would like to have access to many types of product/brand information, the source of the ingredients, authenticity, etc., but also to be able to view all this information across various platforms (e.g., website, in-store, apps, etc.) in real time (Deloitte, 2016).

A similar study released by the United States-based Food Marketing Institute (FMI) in 2018 supported this statement and reported that 75% of consumers are more likely to switch to a brand providing more in-depth product information (in addition to what's provided on the physical label) as opposed to 39% in 2016 in a similar research conducted by Label Insight (O'Neal, 2020).



In addition to customer-related issues, there are also challenges surrounding the efficient collaboration and communication of parties involved in the food chain from production to the end user. One of these challenges is responsible sourcing. Food supply chains suffer from fraud, false claims, corruption and gray market trading which necessitates transparency and traceability for all the actors in the ecosystem to confidently offer customers good-quality products.

There is also the performance variability of the actors in the system. Operational and product handling processes as well as the variance in quality of these processes are not captured in the current supply chain solutions. Growers, distributors, third party actors are free to perform inefficiently without being noticed and with no repercussions as the traditional supply chain solutions cannot pinpoint the main cause of the quality issues (Kyle Tanger, 2020).

These areas are further discussed in the following subsections.

Traceability and Transparency

In terms of traceability, Blockchain solutions will provide retailers means to link a certain product back to its origin in a reliable manner.

The solutions guarantee consumers complete product traceability across the entire supply chain from farms to the stores. Consumers will be able to access to intricate details of a product life including GPS coordinates of the farmers, product collection and packaging date (if relevant) as well as the list of stakeholders involved in the product line (O'Neal, 2020).

The technology will be used to tell customers that a particular batch of parsley came from a certain harvest on a particular farm, so if a consumer gets sick, relevant governmental authorities will have ample information to begin their investigation (Splitter, 2020).

Incentive-based Quality Improvement

With the advancements in Blockchain solutions, performance reliability and responsible sourcing challenges can also be addressed. The organisations can exert control over their suppliers or any other parties that they have no operational control by promoting compliance and introducing incentives. Once the organisations are able to monitor products and treatment processes across the value chain, they can better plan and proactively manage risk. They can potentially reduce future risk by analysing (immutable) data and catch any anomalies, incentivise the relevant stakeholder to take corrective actions. When spread accross thw whole sector, this practice would lead to improved product quality and reduced food waste for the entire industry.

Integration with IOT to increase data

Blockchain solutions reach its potential when they areused with other technologies and systems such as IOT technologies. When used with sensors and precision delivery systems for pesticide and water all connected to a network, blockchain solutions can record a wealth of reliable data and employ it in the field to analyse and add value further (Splitter, 2020).

For instance, Bühler, a food technology company based in Switzerland introduced two blockchain-ready products: Laatu, a tool aiming to record how microbial contamination of dry goods is treated and reduced, and Tubex Pro, a scale system that records a constant flow of production data and makes self-optimisation (Zmudzinski, 2019).

Similarly, Walmart China announced its plans to track food though its supply chain using Blockchain.

In the report, Walmart China has stated 23 product lines to be tracked by the Blockchain Solution and further 100 products will be included, covering over 10 product categories such as fresh meat, rice, cooking oil, mushrooms, etc (Palmer, 2019).

There are also solutions introduced to track seafood. U.S. Seafood Trade Association National Fisheries Institute (NFI) has collaborated with IBM's Food Trust to trace seafood (Zmudzinski, National Fisheries Institute and IBM's Food Trust Work on Seafood Blockchain Traceability, 2019). North America's seafood firm, Bumble Bee Foods also launched a blockchain platform for seafood traceability to monitor the supply chain of yellowfin tuna from Indonesia to end customers (Marr, 2019).

Blockchain solutions such as the one listed can allow all actors of the supply chain to collect more data by using IOT sensors, to create freshness KPIs accordingly and develop new grading and pricing guidelines possibly even before the transactions occurring.

As a final note, one foreseen drawback of existing Blockchain solutions is its dependency on correct initial data entry. When the data is entered by IOT sensors, there is a certain level of reliability, however, for the solutions that require human to insert data into the sytem, there is no guarantee that the data is reliable. Although the technology allows for the prevention of tampering and falsification at later stages in the supply chain, the question remains for the initially entered information. Also called oracle problem, this challenge is currently looked at and there is no -one-fits-all solution (O'Neal, 2020).

Subsectors

Food safety, Food Traceability, Food Production Operational Optimisation.

Stakeholders

Farmers, vendors, retailers, customers, distributors, logistic companies.

Asset Type

All types of tokens: payment, utility and security tokens are observed in the Blockchain solutions implemented for this sector.

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