SMART TRACEABILITY IN THE FOOD SUPPLY CHAIN

THE TOOLS FOR A FUTURE PROOF FOOD SYSTEM

FOOD 2030: CIRCULARITY

In food systems, traceability has become a critical element in supply chain management. It is now considered a new quality index in food. Innovation in the use of information and communication technologies is required to provide transparency and trust through the value chain.

SPECIFIC R&I BREAKTHROUGH TOPICS

Industry 4.0 – Digitalisation in food production: The term Industry 4.0, or the fourth industrial revolution, refers to the use of digital technologies that enable new and more efficient processes, which in some cases yield new goods and services. Digitisation offers enormous potential for all steps in the food supply chain, from food production, packaging and food distribution to nutrition. It enables blockchain technologies to trace the whole food chain, providing information to consumers regarding the origin of food products. Consumers are able to check the nutritional value or allergic risk of products,, as well as other health parameters, to decide on their daily diets.

Blockchain technology for secure food supply: Blockchain technology stores data in blocks, in chronological order. Due to what is considered a mathematical trapdoor, data stored in such a way are impossible to alter or remove. Copies of the chain of blocks - hence the term blockchain - and thereby the information, are distributed among the participants in the network. The copies of the blockchain are then updated when a new block of information is added to the chain.

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EXPECTED IMPACT

Innovations like Blockchain will likely impact the way that food products are sourced, priced, and delivered. It has the potential to monitor social and environmental responsibility, improve provenance information, facilitate mobile payments, credits and financing, as well as decrease transaction fees and facilitate real-time management of supply chain transactions, in a secure and trustworthy way. Indeed, quick tracing of food products to their source will enhance food authenticity, transparency, and trust.

MARKET OPPORTUNITIES / CHALLENGES

- The available data creates opportunities for developing products and services based on intelligence. For example, data can be used in predictive models to predict demand and/or success of a product by making use of new insights about correlations and causalities. As a result, business models can change from responsive to risk-based and predictive.

- New business models will emerge with a wider use of smart traceability technologies. Blockchain solutions can reduce market inefficiencies to create more value. Many inherent inefficiencies, like food waste, are considered a cost of doing business, but blockchain solutions can reduce total industry costs and create new sources of value. New market entrants could offer freshness management services, and product-buyer matching. These new business models enabled by blockchain, can potentially connect the grocery value chain to a new and digitally defined industry-performance standard.

- A main challenge to wider implementation of smart traceability technologies like blockchain remains the complexity of food systems. For a typical agricultural production site, implementing blockchain technology requires a customised system and streamlined practices for data entry. Agricultural products have various forms, storage methods, handling processes, and a variety of data recording methods. Implementing blockchain in scale requires a great effort of customisation with financial and human resources.

EXAMPLE REFERENCES

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ASSOCIATED TRENDS IN FIT4FOOD2030 (URL)

- Economic globalisation
- Blockchain technology for secure food supply chain
- Destabilised consumer trust
- Concentration in food retail markets
- Food regulation

ASSOCIATED CASES IN FIT4FOOD2030 (URL)

- eFoodchain
- followfish
- FOODINTEGRITY
- FreshStrips
- Tellspec

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