Chapter 4
Transforming Agri Supply Chains: A Blockchain Approach for Quality Assurance

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ABSTRACT

There is a great deal of potential for improving quality assurance procedures when blockchain technology is integrated into agricultural supply chains. This review investigates how blockchain technology can enhance quality control, traceability, and transparency in agri-supply chains. Blockchain technology provides a transparent and traceable record of each transaction and movement inside the supply chain, offering a decentralized and immutable ledger system that can address these issues. This work explores a number of uses cases for blockchain technology in agriculture, with a particular emphasis on how it makes it possible to track and monitor products in real time from farm to table. Furthermore, blockchain improves transparency by giving customers access to comprehensive data regarding the provenance, care, and caliber of agricultural goods Agri-supply chain case studies and real-world blockchain applications are analyzed to show how blockchain affects productivity, sustainability, and the development of trust.

DOI: 10.4018/979-8-3693-4330-2.ch004

INTRODUCTION

One of the subjects that has particularly seen an increase in consumption demands is Agri-food, driven by growing concerns about sustainability, ethical farming methods and healthy living habits. Fraudulent mislabelling, contamination and other issues plague the Agri-food supply chains since it is an environment where maintaining integrity is difficult to achieve. Traditional quality assurance methods often are not capable of offering clear and unchangeable tracking of your product's lifecycle from the farm to fork.

Potential solutions are looking at technology, blockchain in particular. Blockchain technology is essentially a decentralised ledger, anonymity and transparency that record all transactions or commodities movement throughout the supply chain. Blockchain can help agri-food supply chain stakeholders to enhance traceability and transparency, confidence, etc.

This article looks at the possibilities of whether blockchain technology could enhance supply chains for organic foods by bringing more guarantee to their content. This study is a Fractional discussion that focuses on the promises of blockchain technology in reduction risks, increasing transparency and empowering customers to choose what food they eat. This article illustrates the way blockchain can help maintain transparency of organic food supply chains through case studies and examples from real-world.

REVIEW OF THE LITERATURE

The literature on how blockchain technology is poised to revolutionise agricultural supply chains; which works through transparency and traceability, cites fast growth being demonstrated in order avoid recurrent problems relating with the agri-food sector to quality assurance. Traditional agricultural supply chains are riddled with inefficiencies, lack visibility and pose challenges in ensuring the integrity and safety of products. Blockchain with its unique features of unchangeable safe record for sharing transactions and product movements, decentralized ledger and smart contract opens up a very good solution to these problems. This review focuses on the adaptation of QA practices due to blockchain technology and summarize researches, case studies as well as current implementation in an agricultural supply chain.

In this section, we discuss some of the research about blockchain-based claims for agricultural supply chains and nutrition related to food traceability literature in farming system narrative on linking with blockchains. Giovanni Mirabelli et al., this paper by Mirabelli (2020) concerns application of block chains in farming with a specific aspect focusing on nutrition traceability issues.