

Aim:

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□ Our study aims to develop a blockchain-based web application that enhances transparency and traceability in the agricultural food supply chain. The primary focus is on providing a secure and trustworthy transaction experience.

Abstract:

The agricultural food supply chain stands as a focal point for research, wherein disruptive technologies assume a pivotal role in enhancing transparency, monitoring, and fortifying transactions. By leveraging blockchain, smart contracts, it becomes possible to monitor the entire supply chain. In this investigation, we have undertaken a critical examination of the applicability of these technologies to the agricultural supply chain, employing the Business Process Modeling (BPM) approach.

The findings derived from the blockchain and smart contracts-based BPM analysis were subsequently integrated with the RAMI 4.0 (RAMI 4.0). This integration has facilitated the introduction of an innovative smart agriculture framework based on the RAMI 4.0. The framework efficiently manages the gas cost in our proposed smart contracts.

Existing System:

□ Traditional supply chains face limitations such as a lack of transparency, third parties' involvement, information security, and inefficiency. In management systems for supply chains are generally centralized, requiring entities to trust one broker with sensitive information. This centralization is a disadvantage of a single point of failure and are more susceptible to hacking and other attacks.

Disadvantages:

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□ Customers always demand better quality products delivered on time and at the right price, which is a big challenge for the supply chain. Lack of traceability to keep track of their orders. Traceability, or tracking a product through all supply chain stages, is more difficult to know the product's origin and ingredients. Maintaining supply chain visibility and tracking shipments become tough when multiple modes of transportation are used. Lack of traceability can create blind spots in the supply chain and weaken the customer's confidence, leading to a loss of profit. Transportation delays and poor storage practices in warehouses are common causes that can affect the supply chain. Lack of traceability has a significant impact on the supply chain because there are several parties involved that have little or no knowledge of other parties' activities. This lack of transparency leads to inefficiency, leading to trust issues among suppliers and customers. If the supply chain operates globally, trust issues become even more complex.

Proposed System:

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□□ With the advent of the latest technologies, blockchain, and smart contracts, most of these challenges can be addressed. We propose a blockchain-based agricultural food supply chain Web Application that enhances the traceability and transparency of products from Manufacturer to Consumer. The application will allow the Consumer to add payment from Consumer for the product they purchased to the Organizer in a secured, transparent way with the help of smart contracts.

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