

DIRECT DELIVERY OF AGRICULTURE PRODUCT FROM FARMER TO CONSUMER THEN PROCESSED FOOD TO THE NGO USING BLOCKCHAIN-BASED

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ABSTRACT

Supply chains have become highly automated and interconnected operations, becoming a major source of profit in today's world. At the same time, consumers are now show in greater interest in quality food. However, it is difficult to track the origin of the data and traceability of the chain. The product is always centralized and its work relies on third parties. Centralized system slack transparency, accountability, and auditing. Among our solutions, we propose a complete blockchain based solution for agriculture Rand food(agribusiness) supply chains. It leverages the central role of block chain and smart contracts offered on the Ethereum blockchain network. Although blockchain can exchange data and information over the internet, it fails to solve some of the biggest problems with the chain, such as trust, ownership, and tracking between users. Therefore, a reliable method is needed to identify, increase reliability and publish information on food products. In this system, all transactions are recorded on the blockchain and the data is finally sent to IPFS (In terplanetary File Storage System). The systems store hashes of data stored in the blockchain and moves it faster, mores securely, and faster. Our system provides smart contracts and algorithms to view the interaction between parts of the system. Additionally, this article introduces the modeling and evaluation of smart contracts and the concepts of security and vulnerable.

Keywords: Accountability, Blockchain, Credibility, Reputation, Supply Chain, Traceability, Trust.

I. INTRODUCTION

Supply chain management (SCM) is a set of processes and procedures used to transform raw materials into finished products, increase customer value and gain competitive advantage [1]. It is also known as the coordination of people involved in the system from job to job. The entire chains divided in to several layers. This step usually involves a process that takes several months to complete [2]. In this case, it may be difficult to identify the source of the problem even if the end product is good. The demand for better products and customer satisfaction is increasing. Therefore, it is necessary to track the process from the origin of the product to the end consumer for each supply chain. [3] To gain consumer trust, retailers must provide accurate and complete information. It is also important for business leaders to adhere to the principles of quality, integrity and reliability of all products. Some regulators have questioned the quality, transparency and ease of supply chain tracking. The development model is ready. These standards are strictly enforced by most governments. The Canadian government requires the use of this symbol. [4] And Barcode used to identify incoming goods. The Chinese government also imposes similar restrictions [1] The purpose of these regulations is to brush for the sake of brushing, be careful, pay attention to the quality of the product.

The supply chain, in addition to being responsible for tracking management, also acts as a portal for delivery. These systems process large amounts of data, increasing the complexity of network architectures. Because these systems tend to overlap, there is a risk of inaccurate or false reporting. [5] Exchanges that allow financial transactions make their networks unreliable and unreliable due to their centralized structure. Also, storage solutions used in the energy distribution sector are often unable to process large amounts of data, which leads to negative effects on the overall performance of the network.

II. RELATEDWORK

Agreeing to [1] an entire blockchain-based agribusiness and nourishment (Agri-Food) supply chain arrangement It takes utilize of the most characteristics of blockchain and savvy contracts, and it's all done on the Ethereum blockchain organize. In spite of the fact that blockchain guarantees the unchanging nature of data

and records within the organize, it still falls brief of fathoming a few key issues in supply chain administration, such as the dependability of the parties included, exchanging strategy responsibility, and item traceability. As a result, a tried and true system that ensures traceability, believe, and conveyance instruments within the Agri-Food supply chain is required.

According to [2] Edgence (EDGe + intelligENCE) is proposed to serve as a blockchain enabled edge- computing platform to intelligently manage massive decentralized applications (dApps) in IoT usecases. To extend the range of blockchainto IoT-based dApps, Edgence adopts master node technology to connect to a closed blockchain based system to the real world. A master node contains a full node of the blockchain and a collateral, and is deployed on an edge cloud of mobile edge computing, which is convenient for the master node to use resources of the edge cloud to run IoT dApps.

According to [3] introduces HCloud, a trusted Joint Cloud platform for IoT systems using server less computing model. HCloud allows an IoT server to be implemented with multiple servers less functions and schedules these functions on different clouds based on a schedule policy. The policy is specified by the client and includes the required functionalities, execution resources, latency, price and soon. HCloud collects the status of each cloud and dispatches server less functions to the most suitable cloud based on the schedule policy. By leveraging the blockchain technology, we further enforce that our system can neither fake the cloud status nor wrongly dispatch the target functions.

According to [4] introduce the concept of a decentralized gasified service exchange platform where the solution providers can dynamically offer and request services in an autonomous peer-to-peer fashion. Cost and decision to exchange services are set during operation time based on gasification policies according to business goals. The proposed concept is based on blockchain technology to provide a tokenized economy where the IoT solution providers can implement gasification techniques using smart contracts to maximize profits during service offering and requesting.

III. SYSTEM ARCHITECTURE

The system contains following modules: Supply(Farmer)-A farmer is first entity in agri-food supply chain, first one to invoke smart contract for trading.

User’s Group(Consumer): The maintains warehouse by (processing, storing & managing) supply of goods from producers & certification of various product standards & authentication regarding quality.

NGO: NGO-Topurchaseconsumer-productsandto collectleftoverfoodfromdifferentplaces.

Distributed Block chain: The Blockchain is the distributed ledger used to represent the current state of delegated access rights in the system. Permissions to interact with the Blockchain are handled by the Root Authority and Attribute Authorities.

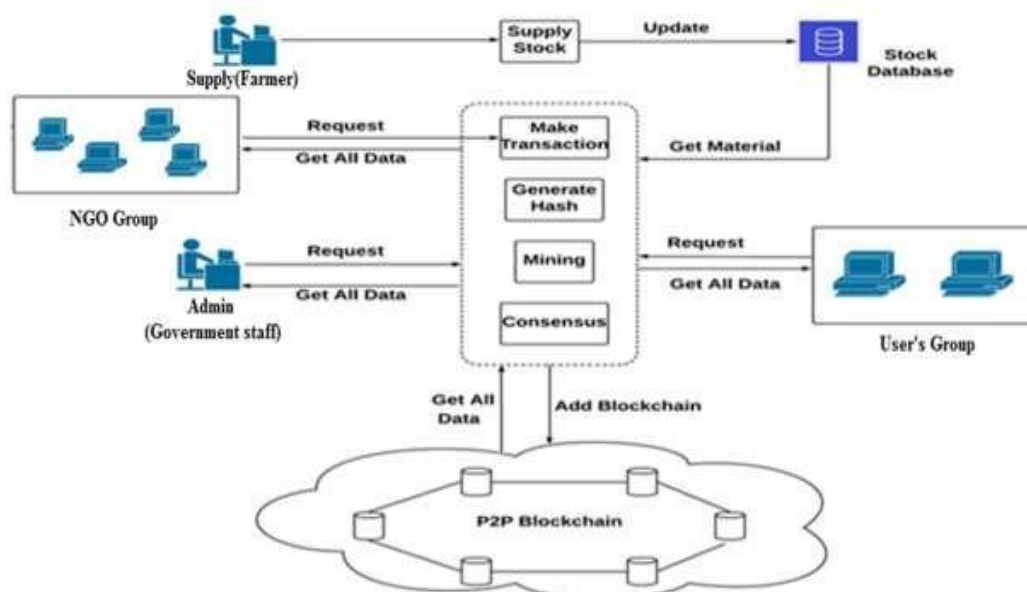


Fig. Blockchain-Based Agri-Food Supply

Model

1. **Supply(Farmer)**-A farmer is first entity in agri-food supply chain, first one to invoke smart contract for trading.
2. **User's Group**: The maintains warehouse by (processing, storing & managing) supply of goods from producers & certification of various product standards & authentication regarding quality.
3. **NGO: NGO**- To purchase consumer products and to collect leftover food from different places.
4. **Admin**: The admin creates multiple farmers, which contains basic information such as farmers' names, addresses and other cooperative information. The administration can update and delete the information of the farmers respectively. The administrator also has access to see all customers and distributors through the specific user in the log report. The maintains warehouse by (processing, storing & managing) supply of goods from producers & certification of various product standards & authentication regarding quality. Distributed Blockchain: The Blockchain is the distributed ledger used to represent the current state of delegated access rights in the system. Permissions to interact with the Blockchain are handled by the Root Authority and the Attribute Authorities.
 - Make transaction
 - Block Generation and blockchain validation
 - Consensus Algorithm validation and blockchain recovery
 - Results Generation

IV. CONCLUSION

We're establishing up an online system that uses blockchain technology to directly deliver agricultural products from farmer to consumer and to non-profit organizations. It facilitates safe and accurate cost estimation. Blockchain technology will secure all data. The size of this industry and the demand for more reliable and efficient information management solutions have led to a number of study recommendations for incorporating blockchain technology into agri-food supply chain transactions.

In this paper, we have introduced a blockchain-based food supply chain system for the agriculture-food industry. The blockchain has gained several benefits to grow and move toward a decentralized, trustable environment. It has many advantages in comparison to traditional food supply chain management.

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