

Blockchain Technology in Current Agricultural Systems

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Abstract - Agriculture is a traditional vocation in India where 58 percent of the population is involved. Agriculture not only practiced here prosperously additionally fortifies the magnification of India's GDP. India approximately engenders 90% of fruits, veggies, and grains, etc., and secures the second rank in engendering victuals, has a designed supply chain system for the conveyance of these products from one place to another. As in every system, there are middlemen who work in this supply chain system. Middlemen works as a broker of grains who purchase these products from farmers at a very low cost and sell them at a high cost in the market. To ascertain security in the agriculture sector we have implemented this conception of utilizing blockchain security in the agriculture supply chain module. It promises a reliable source of truth about the state of farms, inventories, and contracts in agriculture,

I. INTRODUCTION

Blockchain technology could be a unquiet technology that changes business and provides chain models (GoogleScolar). Utilizing distributed package design and advanced computing, blockchain will transmute the means info is changed between actors within the chain. Blockchain technology provides a platform for

where the amassing of such information is often incredibly costly. Blockchain technology can track the provenance of aliment and thus engender trustworthy aliment supply chains and build trust between engenderers and consumers (LIN, et al., 2020). This system will help to track the food providing policies by the government of India during COVID-19 to the people of rural as well as urban areas who are taking advantage of free food and grains on the basis of ration cards (LIN, et al., 2020). This will make all the data transparent in this pandemic time where no offices need to go to check the real image of the market. All the systems will be traced, tracked and monitored using this method automatically.

Keywords - Agriculture Security, blockchain security, Money investors, retailers and customers, GDP, farmers, supply chain.

determining the quandary of pursuit product info in providing chain management. consequently, the current study aims (to provide to produce) a model for evaluating the maturity of blockchain technology within the agricultural supply chain (Ronaghi, 2020). The current analysis is applied that has exhausted 3 stages. within the initial section, the scale of the blockchain area unit stratified by agricultural

specialists utilizing the SWARA technique (Ronaghi, 2020).

The utilization of information and data in the agriculture sector is incrementing day by day and enhancing productivity as well as income of investors and farmers this ameliorates sustainability and efficacy of the products. Blockchain security will magnetize incipient investors and practitioners in the farming community and avail them to facilely obtain updated information and make better decisions for identically tantamount.

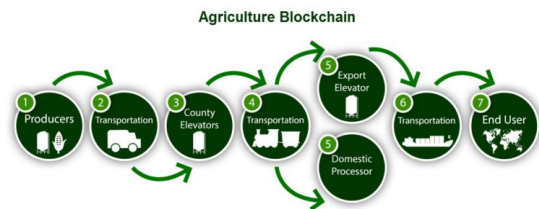


Fig. 1 Agriculture blockchain

To ameliorate productivity and durability of aliment grains vigorous blockchain security over the agriculture supply chain (Xiong, Dalhaus, Wang, & Huang, 2020). All the minuscule and astronomically immense investors in farming need the security of data so that whatever they are purchasing will go through a congruous protective way so that the customer gets the best quality of victims. And they will get so much profit from their selling.

II. LITERATURE REVIEW

In this section, we have discussed the research done on this presented topic, below are a description of every single reference in detail.

[1] (M. P. Caro, et al, 2018) proposed a “Blockchain based traceability in Agri-aliment supply chain management”. In this paper, they suggested an incipient software predicated security system utilizing blockchain for the management of records of farming and product selling. The utilization of blockchain is mentioned as a remuneratively lucrative point here.

[2] (Feng Tian, et al, 2017) proposed a “A supply chain safety via traceability, Blockchain & IOT,”. In this paper, they showed a hardware solution for scanning data cognate to farming documentation then the document will be uploaded on the server then cryptography process is implemented to secure the data from hackers and the data is supplied to customers who are disposed to read it with a protective shield and given a private key. They used IoT and blockchain as a key technology in their project.

[3] (Z. Li, et al, 2018) proposed a “A hybrid blockchain ledger for supply chain overtness”. In this an efficient storage scheme for Agri-Aliment product tacking is launched utilizing IPFS with a secondary storage contrivance to implement this project. A hard drive is utilized as a key to bulwarking the data. Cryptography is applied over the data with a private key assembled.

[4] (J. Hao, et al, 2019) proposed a "Agri-Secure" Soybean traceability in Agri-Aliment supply chain predicated was proposed for the study of soybean productivity and supply for making it as a serviceable implement for making essential oil with purity. Sensors are implemented for checking the quality of the product then the data cognate to engenderment and formulation is stored utilizing the blockchain server side.

[5] (Weijun Lin, et al, 2020) proposed a paper named “Blockchain Technology in Current Agricultural Systems: From Techniques to Applications” This system explains how blockchain can be used as a security measure when data is transmitted from one to another. Supply chain after covid-19 is also proposed here using IOT and blockchain technology. Many processes are also examined in this paper to increase traceability.

III. METHODOLOGY

Blockchain technology sanctions peer-to-peer transactions to take place transparently and without the desideratum for an intermediary like a bank or brokers in the agriculture sector (Patgiri, Acharjamayum, & Devi, 2019). By eliminating the desideratum for a central ascendancy, the technology transmutes the way that trust is granted – in lieu of trusting an ascendancy, trust is placed in cryptography and peer-to-peer architecture (Patgiri, Acharjamayum, & Devi, 2019). It thus avails instauration the trust between engenderers and consumers, which can minimize the transaction costs in the Agri-victuals market (Xiong, Dalhaus, & Huang, 2020).

Our system is implemented for trading and distributing mechanisms to make secure trading between farmers and the retailers. The system follows a layer of three layers designated a data layer, blockchain layer, storage layer. All the layers are expounded below:

1. A data layer:

Data layer handles the interactions between entities of Agri-aliment supply chains. These interactions involve the trading of products along with proof of an auditable distribution (Patgiri, Acharjamayum, & Devi, 2019). In this layer data entered or uploaded by the admin will be secured by a layer which is called data layer and the layer will be of encryption method. By which the data cannot be clearly visible to the hackers and they cannot hack the data. The data will be encrypted till given command for decryption.

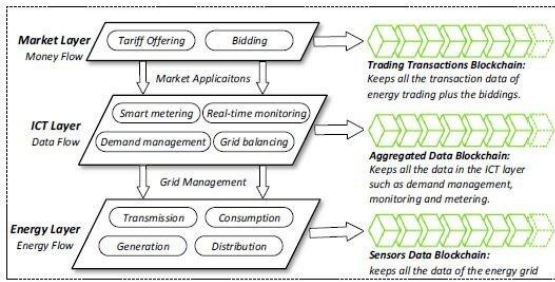


Fig. 2 Data Layer Function

2. Blockchain Security Layer

This module will look after all the operations under the blockchain security process along with the traceability (LIN, et al., 2020).

The data uploaded by the admin will get stored on the server with encryption and the blockchain will keep an eye on every user using the uploaded data in real-time. They will go through different processes and then shared to users (Ronaghi, 2020).

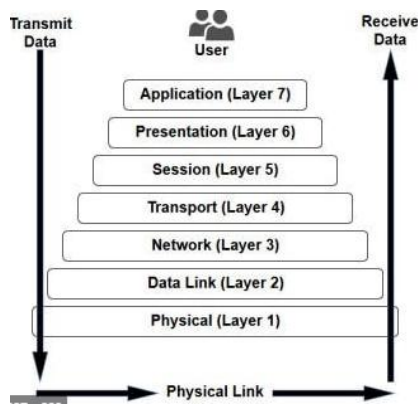


Fig. 3 Blockchain Layer

3. Storage Layer

This layer is responsible for storing data in a secured way and to protect it from third party involvement. All the transactions and events will be noticed and recorded (Patgiri, Acharjamayum, & Devi, 2019).

The storage of the uploaded data is a big challenge as it should not be hacked by anyone nor changed, manipulated, copied, or downloaded. That's why three layers of security are added in the system (Xiong, Dalhaus, & Huang, 2020).

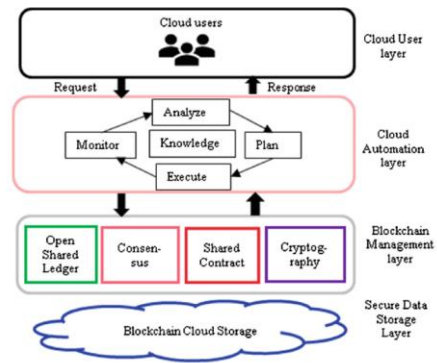


Fig. 4. Storage Layer

Blockchain provides transparency of data amongst all users so that the data is secured and shared among sanctioned persons with a security key or in a protective view, with this no one can hack or make changes to the documents without sanction (LIN, et al., 2020).

IV. RESULTS

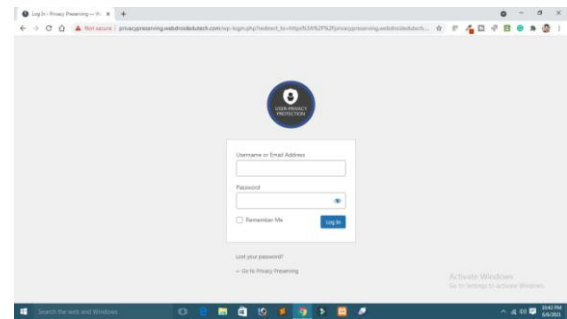


Fig. 5 Login Module

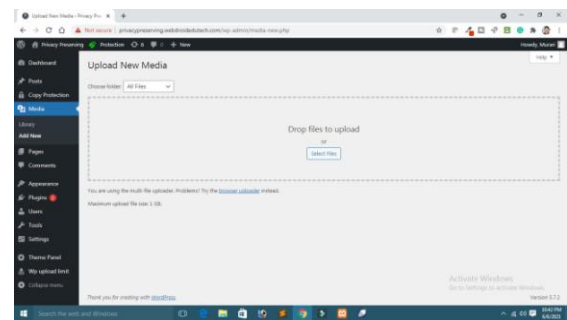


Fig. 6. Document Upload Panel

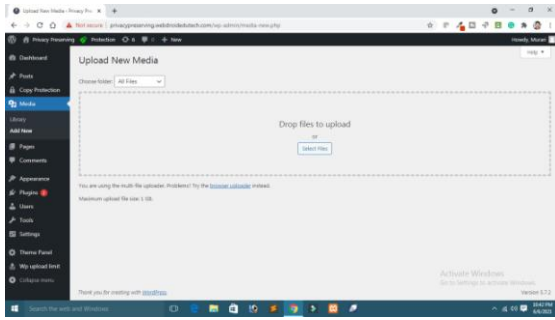


Fig. 7 Uploaded file in media storage of server



Fig. 8 Sample data secured and content protect

V. CONCLUSION

Our system provides the efficiency of documentation and the security of documentation via blockchain technology. This amends the precision of documentation and protective view of farming products to safely distribute the products to the customers with congruous quality and quantity without any middlemen involved in it (Patgiri, Acharjamayum, & Devi, 2019). We used blockchain as a key feature to evade third-party

involvement. We are giving a secured environment to the users of the system.

VI. REFERENCE

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