



Blockchain Technology In Current Agriculture System

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Abstract:

The paper presents block chain technology is attracting great attentions in diverse agricultural Packages. Those programs may want to satisfy the various wishes in the ecosystem of agricultural Merchandise, e.g. increasing transparency of food safety and IoT based totally meals great manipulate, Provenance traceability, improvement of agreement exchanges, and transactions performance.

Keywords: Blockchain technology, Food supply chain management, Integrity, Traceability.

I. INTRODUCTION

Current agricultural development and reform are calling for brand fresh techniques and innovations to create a more transparent and accountable environment within the agriculture sector. One of the emerging tools is block chain technology. Unlike conventional centralized and monopolistic agricultural management systems, block chain provides a decentralized organisation to store and retrieve data that are shared with multiple untrusted parties. During this manner, it could potentially resolve form of significant problems in current systems caused by the following reasons:

- (i) Hackers can easily attack the centralized system to tamper data integrity.
- (ii) Insider manipulation of the centralized database could compromise data integrity.
- (iii) A supply chain management system is over-reliant on the centralized database (single point failure problem).
- (iv) High costs when involving a third party to verify and monitor transactions. To solve this issues, distributed database enhanced by advanced cryptography is proposed in

the past few decades. Among these, block chain is one in every of the foremost predominant emerging methods to unravel trust related issues generated by the invention of Bitcoin in 2008.

II CHALLENGES

The challenges of smart contract is that the key focus when blockchain technology is deployed in agricultural systems. In these challenges are summarized supported the smart contract life cycle, which incorporates creation, deployment, execution and completion stages. Within the creation stage, function and readability issues are faced by the developers and practitioners. Developing human readable code and achieving expected functionality are crucial for accountability of smart contracts. Further, good smart contract design could solve the matter of under optimized code, which may lead to extra costs in transactions, or underpriced operations resulting denial of service (DoS) attacks. Within the deployment stage, contract correctness and control flow are two major factors that ensure prime quality of smart contract. Many methods, such as bytecode analysis formal verification and graph based analysis proposed to test correctness and control flow of smart contracts for deployment. Within the execution stage, execution efficiency of smart contract must be guaranteed. In and instruction execution of smart contracts by proposing Software Transactional Memory based approaches can significantly improve the execution efficiency.

III WORKING

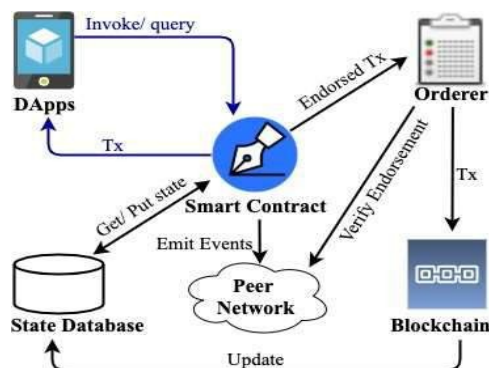


Figure shows the diagram of a system during which smart contract refers to a computerized program which is consisted of states, values, addresses and logical functions that are required at the business model layer in a very system. the thought was initialized to automatically execute contracts to boost efficiency of business models involved smart contract plays a key role in a very blockchain system implementation. In specific, once it takes the transaction requests as input to trigger the business logic, it uses defined policy to induce the endorsement from peers within the blockchain network.

After receiving all the endorsements, it calls the ordering services to verify the endorsement and add the verified transactions into blocks of the blockchain.

The records stored within the blockchain is immutable so nobody could tamper the on-chain data. additionally, DApps can query the states of accounts or transactions via the smart contract.

To support the fast blockchain application development, most blockchain platforms support the programming of smart contracts to fulfil the various business logics behind these applications. Ethereum platform and its extension platform Quorum provides Turing complete smart contracts: they compile and Serpent code into Ethereum virtual machine bytecodes and also the EVM takes responsibility to trace state changes to make sure Turing completion. because the most active platforms in Hyperledger family, Hyperledger Fabric and Sawtooth uses Golang, Java, Python and Javascript as main programming languages for smartcontract development.

ADVANTAGES

1. Increases trust between parties.
2. Handing healthier products to consumers.
3. Enabling a better life at a global scale.
4. Facilitate information sharing throughout the supplychain.
5. Significantly reduces agriculture transaction costs.

APPLICATION

1. Food Contamination and Fraud Issues
2. Data Security and Safety in Smart Farming
3. Trust and Efficiency issues in financial transactions inthe agricultural supply chain
4. Data Transparency and integrity of agriculture relatedinformation management systems

CONCLUSION

To promote blockchain techniques, especially their various uses within the ecosystem of agricultural products, we've presented a comprehensive survey on current blockchain based agricultural applications and innovations. we've explained various concepts of blockchain technology, including its data storage ecosystem and its several popular application platforms.

We have offered an in depth investigation of desperate blockchain applications within the agricultural sector. Then, we've got considered several key challenges within the current use of blockchain related technologies in agricultural applications and provided some possible solutions. He application of blockchain agriculture continues to be within the early stage, although there are ongoing research, projects, and initiatives to achieve the foremost benefits of introducing blockchain based technology in agriculture. These ongoing processes are centered around topics like traceability, transparency, creditability, and auditability of agricultural data via blockchain based technology. Moreover, they're developing useful models or applications that may be

used to improve the performance of the agriculture sector. This research provided a summary of the qualitative review for the screened scientific article, with the goal of facilitating research and future in-depth research for academics inquisitive about blockchain, particularly within the agriculture sector. First, the first keywords employed in the subject were recorded for every selected publication, which can aid new researchers in locating the foremost popular keywords within the blockchain within the agricultural topics more quickly. Second, the most important purpose and contribution for each publication were also noted, making it easy to know the basic value of each publication.

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