



Fertilizer Blockchain Controlling System

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Abstract : People from all walks of life sharing all types of thoughts exchange one collective challenge, which is 'starvation', and it needs 'food' for existence. Fertilizers shall carry on playing an important part in meeting this 'everlasting challenge.' Needless to say that green supply chain management has countless significance in the 'fertilizer sector'. There are incredible monetary and ecological opportunities for development in the supply chains of fertilizer plants. Manufacturing of fertilizers caused some pollution, which manifests all through its supply chain in the form of losses. The additional need of fertilizers in agricultural sector must primarily ensure food safety and environmental protection. Through this research paper, an effort has been made to express a model of twelve governing drivers which play an important role in the execution of green supply chain management for the fertilizer plant in Punjab, India. The methodology used in the analysis of drivers was 'Interpretive Structural Modeling,' and 'Matriced Impacts Croises Multiplication Applique and Classment analysis' was applied for improved understanding of all these drivers. The analysis proved that Government Regulatory System was a key driver for the implementation of green supply chain management practices. It would further help the management to focus on the main drivers in the execution of such environment friendly practices.

Key Words: Blockchain

I.INTRODUCTION

To increase and securing sufficient food production, one of the major inputs in agriculture system is the fertilizer. Different types of fertilizer are used by the farmers of India. The uses of fertilizer have increased due to the expansion of irrigation facilities and make the cultivation process productive with varieties of crop plantation. Most commonly used fertilizers are MoP, TSP, and Urea, and these fertilizers are holding leading percentage of 70-75% while comparing with total fertilizer use. To fulfill the farmer demands of these fertilizers some of them are produced by the factories and also imported from other countries. The current infrastructure of India for fertilizer distribution supply chain management system is a manually controlled system. From the production to distribution, importing and availability to the farmer doorsteps all the process is run by manual pen and paper-based system or by some database management software. Hence, lots of challenges and critical issues are becoming the prime factor for this fertilizer distribution process management. The administration never concedes about the deficiency or emergency of fertilizer supply and accessibility in the nation, yet some of the time acknowledges that the deficit is because of the defective promoting framework.

Blockchain based Fertilizer Distribution System:India Perspective shippers are two of the profoundly advantaged clients who can just produce new units of fertilizer to be distributed to



the end level clients by the previously mentioned arrangement administrators. The rest of the portion of the article has been organized as follows. The related study described in section 2 presents a comprehensive review of the existing process for the fertilizer supply chain to build a concrete background for the later chapters. It also identifies the problem of the existing process flow. Section 3 describes the blockchain-based supply chain management process elaborately after that it is also discussed why we need blockchain. The design principle for the proposed framework has been illustrated in Methodology.

II. PROPOSED SYSTEM

The current fertilizer supply chain management system is managed by manual process or by using some data base management system, since it is a manual process the possibility of tempering the data is too high

In this proposed system we use block chain technology to ensure the security.

III. OBJECTIVES

Create a web application which is used to track fertilizer from the start point (manufacturers or importers) then track it down to distribution network (ministries of chemical and fertilizers, department of fertilizers, licence wholesaler and retailer) then at the end root node will be actual buyers such as farmers

In this web application, there are mainly two parts

1. Data entry point when a fertilizer visits a node then the data will be entered there this data contains the details of fertilizers trackback system by knowing fertilizer details such as ID we can trackback fertilizer so that fertilizer from where it was manufactured or imported which node did this fertilizer visit all.

2. This information will be gained in this part.

III. LITERATURE SURVEY

The history of Indian fertilizer industry dates back to 1906 when the first fertilizer factory was opened at Ranipet, (Tamil Nadu). Since then there have been major development in terms of both quantity and types of fertilizer produced. (Source – internet). Prior to 1960-61, India produced only simple nitrogenous fertilizers such as Ammonium Sulphate (AS), Urea, Calcium Ammonium Nitrate (CAN), Ammonium Chloride and Single Superphosphate (SSP). Production of NP complex fertilizers commenced in 1960-61. Currently India produces a large number of NP / NPK fertilizers. In addition various grades of simple and granulated mixtures are also produced.

The Indian Fertilizer Industry is regulated and monitored by the Ministry of Chemicals and Fertilizers (Department of Fertilizers). The main functions of the Department of Fertilizers include planning, promotion and development of the fertilizer industry, planning and monitoring of production, import and distribution of fertilizers, management of financial assistance by way of subsidy / concession for indigenous and imported fertilizers, Administration of the Fertilizers

(Movement Control) Order, 1973, Policy and pricing matters relating to Urea and matters concerned with supply and availability of Fertilizers, raw materials and marketing of fertilizers.

Government of India passed Fertilizer Control Order (FCO) under the Essential Commodities Act (EC Act, 1955) in the year 1957 to regulate sale, pricing and quality of fertilizers. Subsequently, movement control order was passed in 1973 to regulate distribution of fertilizer. The State Governments have been adequately empowered to ensure selling of fertilizers at MRP and take appropriate action to curb black marketing, smuggling and diversion of subsidized urea to industrial sector and to initiate action against persons who indulge in illegitimate activities. State Governments are empowered to conduct search, make seizures and take punitive action against any person violating provisions of FCO, 1985 and Essential Commodities Act 1955.

IV.SYSTEM ANALYSIS

EXISTING SYSTEM:

We will create a system where each and every fertilizer will be tracked down from manufacturers or importers to farmers who buy it. To track down we use a web application with this web application will be using blockchain to make this system very secure.

PROPOSED SYSTEM :

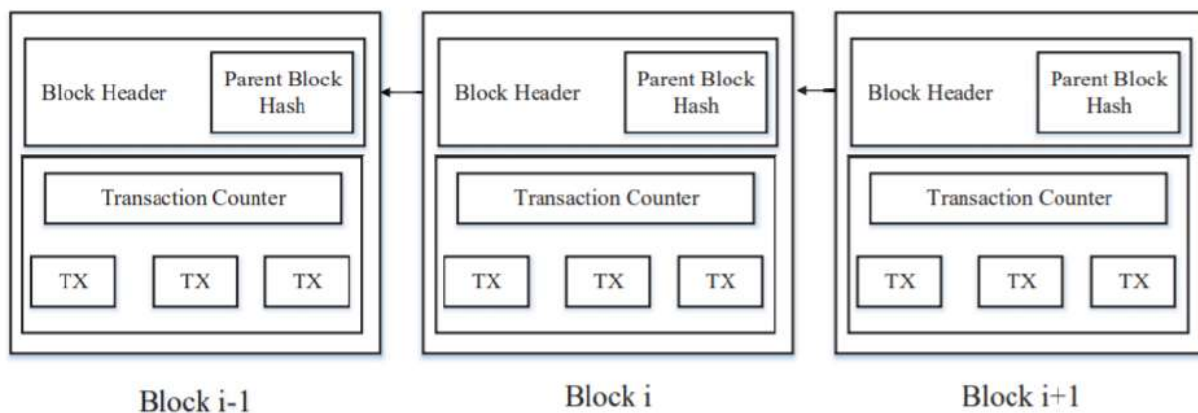


Fig 1: Illustrate an example of a blockchain

Blockchain is a sequence of blocks, which holds a complete list of transaction records like conventional public ledger. Figure (1) illustrates an example of a blockchain. With a previous block hash contained in the block header, a block has only one parent block. It is worth noting that uncle blocks (children of the block's ancestors) hashes would also be stored in ethereum blockchain. The first block of a blockchain is called genesis block which has no parent block. We then explain the internals of blockchain in details.

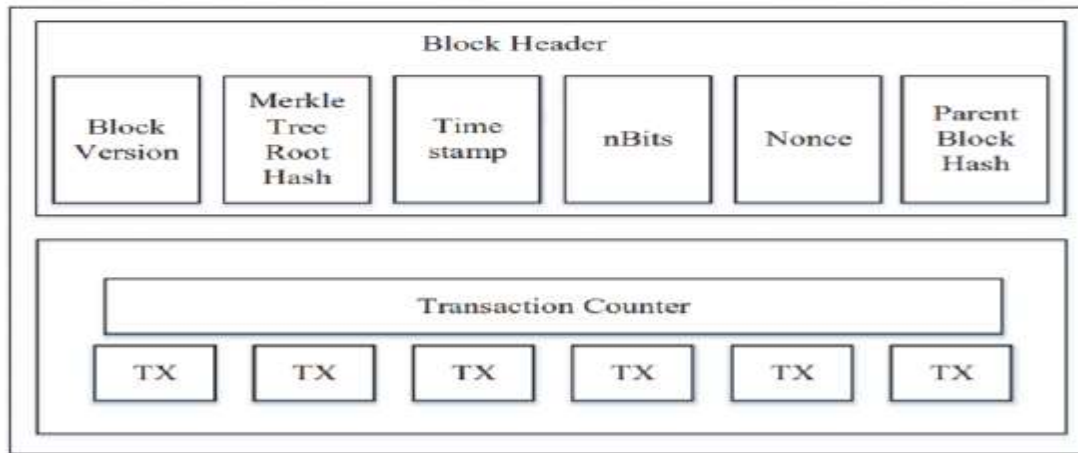


Fig 2: Represent of each block in blockchain

A. Block

A block consists of the block header and the block body as shown in Figure (2). In particular, the block header includes:

- (i) Block version: indicates which set of block validation rules to follow.
- (ii) Merkle tree root hash: the hash value of all the transactions in the block.
- (iii) Timestamp: current time as seconds in universal time since January 1, 1970.
- (iv) nBits: target threshold of a valid block hash.
- (v) Nonce: an 4-byte field, which usually starts with 0 and increases for every hash calculation (will be explained in details in Section III).
- (vi) Parent block hash: a 256-bit hash value that points to the previous block.

The block body is composed of a transaction counter and transactions. The maximum number of transactions that a block can contain depends on the block size and the size of each transaction. Blockchain uses an asymmetric cryptography mechanism to validate the authentication of transactions. Digital signature based on asymmetric cryptography is used in an untrustworthy environment. We next briefly illustrate digital signature..

B. Digital Signature

Each user owns a pair of private key and public key. The private key that shall be kept in confidentiality is used to sign the transactions. The digital signed transactions are broadcasted throughout the whole network. The typical digital signature is involved with two phases: signing phase and verification phase. For instance, an user Alice wants to send another user Bob a message. (1) In the signing phase, Alice encrypts her data with her private key and sends Bob the encrypted result and original data. (2) In the verification phase, Bob validates the value with Alice's public key. In that way, Bob could easily check if the data has been tampered or not. The typical digital signature algorithm used in blockchains is the elliptic curve digital signature algorithm (ECDSA).

B. Taxonomy of blockchain systems

Current blockchain systems are categorized roughly into three types: public blockchain, private blockchain and consortium blockchain. In public blockchain, all records are visible to the public and everyone could take part in the consensus process. Differently, only a group of pre-selected nodes

would participate in the consensus process of a consortium blockchain. As for private blockchain, only those nodes that come from one specific organization would be allowed to join the consensus process. A private blockchain is regarded as a centralized network since it is fully controlled by one organization. The consortium blockchain constructed by several organizations is partially decentralized since only a small portion of nodes would be selected to determine the consensus.

V.SYSTEM DESIGN

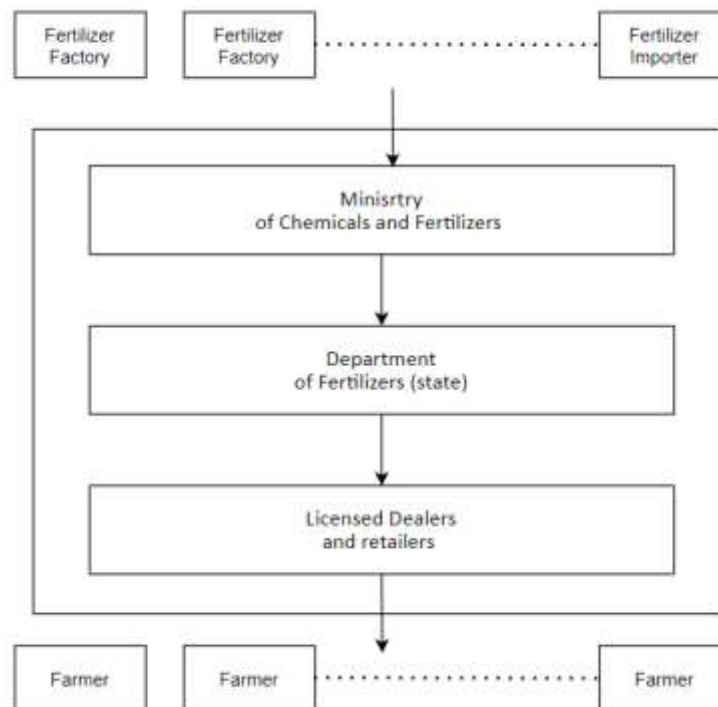


Fig 3:Work flow diagram

Ministry Of Chemicals And Fertilizers: The Department of Chemicals and Petrochemicals was under the Ministry of Industry until December 1989, when it was brought under the Ministry of Petroleum and Chemicals. On June 5, 1991, the Department of Chemicals and Petrochemicals was transferred to the Ministry of Chemicals and Fertilizers.

Department Of Fertilizer (State): Department of Fertilizers seeks to ensure adequate and timely availability of fertilizers at affordable prices for maximizing agricultural production in the country. Detailed information related to various divisions of administrative and vigilance, fertilizer accounts, movement and PSU etc. is given. Details of fertilizers policy and rates of fertilizers are provided. Link of the Fertilizers Monitoring System is also given.

Licensed Dealers: Users can get detailed information about the license for various agricultural products provided by the Food Safety and Standard Authority of India (FSSAI). The FSSAI has also provided various downloadable forms for licensing, registration and renewal. List of Designated Officers for licensing is also available.



VI. POSSIBLE OUTCOMES

1. It tracks product details using blockchain.
2. There is clear path for each and every product that can be tracked back.
3. The highest preference is given for security.

VII. CONCLUSION

The main goal of this paper is to build a system that provides the security for the fertilizer in the distribution process.

Here in this paper we use Block chain technology in which tracking of products can be easily done and false transaction can't be done. Hence the Block chain will help us to know the status of the product at every phase during the distribution

REFERENCES

- [1] "State of blockchain q1 2016: Blockchain funding overtakes bitcoin," 2016. [Online]. Available: <http://www.coindesk.com/state-of-blockchain-q1-2016/>
- [2] S. Nakamoto, "Bitcoin: A peer-to-peer electronic cash system," 2008. [Online]. Available: <https://bitcoin.org/bitcoin.pdf>
- [3] G. W. Peters, E. Panayi, and A. Chapelle, "Trends in crypto-currencies and blockchain technologies: A monetary theory and regulation perspective," 2015. [Online]. Available: <http://dx.doi.org/10.2139/ssrn.2646618>
- [4] G. Foroglou and A.-L. Tsilidou, "Further applications of the blockchain," 2015.