

Agricultural Excellence Using Block Chain Technology

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Abstract- Since most of the Indian farmers in Indian agriculture have small acres of land, there is no proper yield from those lands. Not all farmers can cultivate more crops and get more yield and profit. This is because the crops are cultivated in small lands which yields a decrease in the amount of crop production.

This project is about integrating small agricultural lands, using unused lands, leftover lands, etc. to form large-scale lands for cultivation. The farmers will be able to find empty lands from landlords who are ready to rent, and farmers can form groups and combine the lands with farmers who have smaller lands like them. Agriculture machine providers are also part of the group, once they make a contract with the farmers. Financial support is also available to farmers. The finance may be from the industries and also from government or private organization policies that are ready and interested to invest. They will agree and later provide finance. Buyers are also included in our project who will request and purchase their complete products or goods.

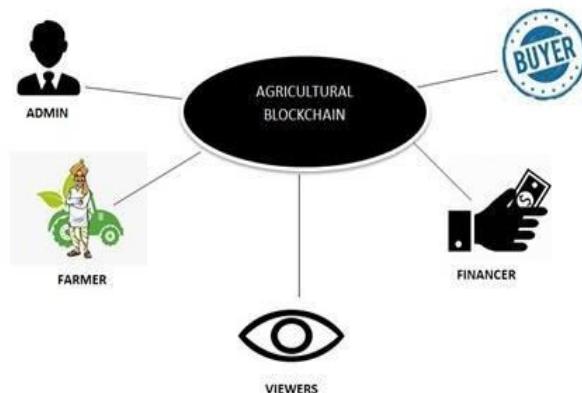
Farmers will get to adopt new technologies and large machines. Our project is implemented using Blockchain technology. Farmers, financers, and buyers are linked directly with each other. They have secure contact and transactions among them because their documents will be verified by the Admin who will be from the government panchayat.

Keywords—Blockchain, Agriculture, Farmers

I. INTRODUCTION

We all know that agriculture is one of the most important sectors in this whole world. Every people in this world are dependent on crops and goods. The Country's economy also depends on agricultural productivity. Due to information asymmetry, farmers do not receive their payments and shares, they find it difficult to invest, they don't find a proper buyer even though these are the most important part of the chain. Few retailers are providing low quality

fertilizers, pesticides to farmers to increase their profit margin which in turn is effecting farmers production. All the consumers, providers, and common people are unaware of the exact process going on in the whole agriculture process. Blockchain applications will solve these problems by solving the traceability of each product. Blockchain is the best and safer way for maintaining, recording activity, and keeping data secure. Since the data can't be deleted or corrupted accidentally by anyone we can use Blockchain technology to solve the agricultural development issues. Once farmers, financers, buyers who are majorly involved in the complete agriculture process start using it we can also hope for a better yield in the agricultural process with the help of Blockchain soon in the future.



II. LITERATURE SURVEY

It is critical to distinguish what subjects identified with the agribusiness area have been as of now considered and tended to in Blockchain and presently the greatest difficulties and restrictions that need additional examination. Hence the Literature survey on agricultural developments using Blockchain technology gives us the idea to recognize which sector and domain need to be improved.

Blockchain Technology and its Techniques

Progressively, Blockchain innovation is gaining its importance and significance in many rural applications. These applications could fulfill the assorted necessities in the biological system of agrarian items. That is expanding straightforwardness of food handling and IoT-based food quality control, provenance discernibility, improvement of agreement trades, and exchanges efficiency. As numerous untrusted parties, including limited scope ranchers, food processors, strategic organizations, wholesalers, and retailers, are included in the complex farm-to-fork pipeline, it becomes vital to achieving an optimal trade-off between efficiency and integrity of the horticultural administration frameworks as needed in settings. Study of Blockchain technology considers two procedures and rules, innovations utilized in the farming area. To start with, the specialized components, including information structure, cryptographic strategies, and agreement systems should be explained in detail.

In the current agricultural blockchain technological applications they are grouped to to make people understand the use of blockchain techniques.

The well-known platforms and smart technologies are used to show the working of blockchain technology in agriculture to the professionals. This can encourage them for horticulture applications.

We have to understand the key challenges and separate them in many prospective ways that are used in the current agriculture system and understand the the problems efforts and solutions to overcome issues faced.

BLOCKCHAIN IMPLEMENTATION PROCESS

Blockchain data procedure has mainly three stages to protect information uprightness. An illustration of an exchange record on-chain measure is shown as follows:

Stage I: Before every exchange, the buyers address is firstly generated, and the buyer makes payment to that address. After the buyer finishes the payment, the exchange is carefully endorsed by both the exchanges gatherings and communicated to every one of the members in the organization. From the member side, in the wake of getting another exchange, the exchange is firstly verified, and if legitimate, gathered into a square.

Stage II: Every participant notes the collected transaction records during a period into a square, and puts an attempt to transfer his square to the Blockchain. Interested member can tolerate outing from the friends, different dispersed agreement plans are presented in past area.

Stage III: When the new uploaded block is connected with the existing chain, it is broadcasted to all the other participants in the organization. In the wake of accepting the square, different members can verify all transactions in the block to ensure data integrity. Since each square in the chain requires the hash worth of the past hash, the members can communicate their acknowledgment of specific chain by utilizing its hash to make the following square. By repeating these stages, all the data can be stored in the decentralized data set successively. It gives a straightforward climate to every one of the partners so a believed framework is worked across the organization.

APPLICATIONS OF BLOCKCHAIN TECHNOLOGY IN AGRICULTURAL DEVELOPEMENT

During the ongoing years, the Blockchain has drawn in significant expanding considerations in agrarian areas. This pattern is driven by the major concerns in several important aspects, i.e. food pollution and extortion issues, information security and safety in smart farming and IoT based precision agriculture, trust and efficiency issues in financial exchanges in the agrarian inventory network and information straightforwardness and respectability of horticulture-related data the executive frameworks. The guideline and administration look for additional developments on embracing Blockchain strategies to accomplish better information straightforwardness and responsibility with flexible, exorbitant, and practical arrangements. Every one of the partners engaged with farming creation and the transaction can secure their data integrity in Blockchain-based frameworks. Along these lines, clients have high confidence when utilizing the items or the administrations offered by them.

Literature Review of Blockchain In Agriculture

Blockchain has been used to remedy troubles from unique sectors. In agriculture, a Blockchain is being applied for improving food protection, and transaction times.

The increasing interest in Blockchain generation in agriculture calls for a clear, systematic assessment. In this sense, we present a scientific literature assessment (SLR) whose goal is to collect all applicable research on the Blockchain era in agriculture to stumble on current research topics, major contributions, and benefits of making use of Blockchain in agriculture. The outcomes display that 60% of papers are centered on the meals supply chain. Additionally, 50% of the researches on Blockchain in agriculture is ruled employing Asian community researchers, mainly from China. Further, half of the research addressed demanding situations related to privacy and safety of the internet of things with Blockchain generation.

Block Chain-Based Totally Traceability In Agri-Food Supply Chain Management, A Realistic Implementation

The latest, exponential upward push in adoption of the most disparate internet of things (IoT) devices and technology has reached additionally Agriculture and food (Agri-meals) supply chains, drumming up good-sized studies and innovation interest toward developing dependable, auditable. Agri Block IoT, a fully decentralized, Blockchain-based traceability solution for Agri-food supply chain control, capable of seamlessly integrate IoT devices generating and consuming digital statistics alongside the chain. To successfully assess Agri Block IoT, first, we defined a classical use-case within the given vertical domain, particularly from-farm-to-fork. Then, we developed and deployed such use-case, reaching traceability using one-of-a-kind Blockchain implementations, namely Ethereum and Hyper ledger saw enamel. Sooner or later, we evaluated and compared the overall performance of each of the

deployments, in terms of latency, CPU, and community usage, additionally highlighting their primary pros and cons.

III. EXISTING SYSTEM

Currently, the government and some financial agencies are giving loans to the farmers. But most of the farmers do not know how to make use of the loans and often fail to pay their dues. Many of them get a loan due to loss in their production they fail to pay back and commit suicide. Farmers with smaller land can't get loans easily. Farmers with less land for cultivation are using this loan in a traditional way instead of using them for implementing new technologies. They are not using types of machinery available for farming and production using these technologies is simple and costs less time. The existing system does not make use of smart technology. When there are so many ways farmers still have to go pay their dues manually, It's hard to find financers and buyers who are suitable for them. There are more drawbacks in the existing systems which will not Improve their production as well as profit.

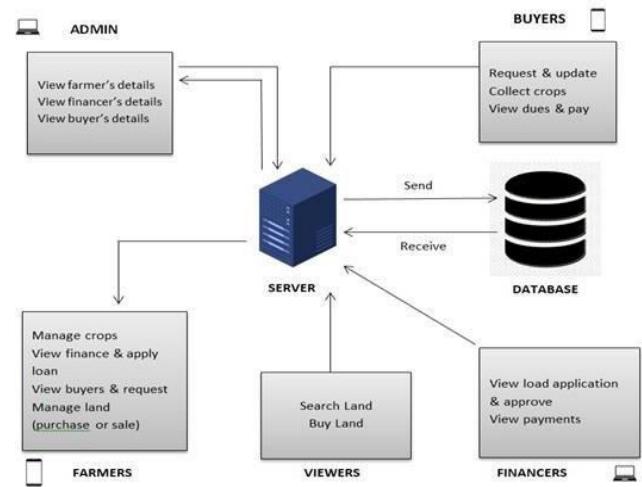
IV. PROPOSED METHODOLOGY

A Blockchain is a series of immutable information of records this is managed by a cluster of computer systems now not owned by way of any single entity. Each of these blocks of knowledge is secured and certain to one another victimization scientific discipline principles. A Blockchain is a chain of virtual blocks that contain statistics of transactions. The information on a Blockchain is secured via cryptography. Every block is connected to all the blocks earlier than and after it which makes it hard to tamper with a single report because it's far related to different blocks additionally.

This technology permits direct verification among users. For the integration of lands, loan procedures, and buyers' communication there should be trust among farmers, financers, and Buyers. This technology can be used to build trust among them. All the transactions and statistics are attached to the block after the method of most trust verification. There may be a consensus of all the ledger participants on what is to be recorded within the block.

Blockchain can provide lower cost and faster payment options to agriculture Commerce participants. The government funds are given to the farmers. But farmers cannot use them for small lands. So these farmers can group such small lands into large lands. This enables farmers to use new technology in their cultivation. It also increases trust about the yield and pays. Some intermediaries can be avoided completely. The financial aid will be received depending upon their cultivation and production activities. The financial aid can be from the well-known registered organization, or private and government policies. The new technologies can be used since they are implementing in large fields. The marketing agencies or factories can make a contract with such groups by giving some financial help and can also get their desired products. They can also provide financial help to farmers by purchasing their items at cheap prices. Some buyers who are interested to buy specific crops

directly from the farmers can approach them directly. Accurate records are available that identify the genuine owner and these records cannot be forged.



V. CONCLUSION

The farmers want a trustworthy system which they can believe that they will get help at any point in agriculture. As the Platform which we are creating will build trust in the farmers to believe. The government is using every platform to help the farmers retailers and traders. If we integrate all the platforms in the single roof Blockchain then it will boost the Productivity of our country. Blockchain technology is the key of this agro technology nothing can be manipulated easily by anyone, at any place, and at any time. The main intention of our project is to identify problems in agricultural sector, main contributions that has been made to improve agricultural development. And to excellence the benefits of Blockchain technology in agriculture. The farmers will get facilities from the initial stage of group formation to the final stage of marketing in a single platform. Which is very easy for them and efficient to use. Currently blockchain technology has become very promising and many contributions are made using this technology in the recent decade. Many of the countries scientific communities and the mans are interested in in making use of blockchain technology. the main reason which makes everyone use this blockchain technology is is because of its security e and it reduces the frauds and errors in the supply chains of agricultural sector. Farmers can produce a quality safety and natural food products and goods. Soon farmers can overcome all the issues and can get solutions to overcome the problems and challenges they face facing using this project which is made using blockchain technology and it gives them much satisfaction in there agricultural sector. It can solve majority of their problems in future.

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