E-BAZAAR IMPLEMENTATION FOR BENEFIT OF AGRICULTURAL STAKEHOLDERS

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Abstract - *Current agricultural development and reforms are calling for new techniques and innovations to create a more transparent and accountable environment in the agriculture sector. This Project links products of traditional and rural artists to the global buyers ensuring fair price to the farming community by devising Block chaining techniques simulating online market as e-Bazaar. Traditional Uzhavar Sandhai forms the best place to buy agricultural products in cheaper price and it is practically imposs3ible in this pandemic situation. This project aims in proposing the e-Bazaar implementation for efficient trade finance in the supply chain management for benefit of agricultural stakeholders. Farmer's market supply chain management and Block chain technology is the study area for implementing this application for the benefit of agricultural stake holders. The regulation and governance seek for more innovations on adopting Blockchain techniques to achieve better data transparency and accountability with flexible, costly and sustainable solutions. All the stakeholders involved in agricultural production and transaction can secure their data integrity in Blockchain based systems. Thus, users have high confidence when using the products or the services offered by them.*

Key Words: Block Chain Technology, Food Supply Chain Management, Agricultural applications, Web Application.

1. INTRODUCTION

Major technological shift is needed for transformation process from conventional centralized agricultural management to decentralized data structure shared by multiple un-trusted parties. Blockchain is a distributed ledger to share transactions or sensitive data across untrusted multiple stockholders in a decentralized network. The data are recorded in a sequential chain of hash-linked blocks that facilitate the data distribution in a more manageable manner comparing to other traditional data storage formats. The blocks are verified and uploaded into the chain-like system by selected nodes via an agreed consensus protocol. This consensus mechanism allows all the parties to engage in the monitoring process when adding data/information flow on-chain.

In addition, the duplicates of these data are stored in all involving nodes to ensure their tamperlessness. The consortium Blockchain refers to a solution to keep data privacy and fast on-chain speed but involving more than one party for data storage. It is the most popular type in agricultural supply chain applications having a balance performance and its most user requirements in this sector. Several essential techniques, including hash, asymmetric cryptography, digital signature, Merkle tree and consensus are utilized in the Blockchain design to achieve a secure ledger with decentralized management. Specifically, each block has a block header and a block body. In block header, several elements are included, such as previous block hash value, nonce, Merkle tree root hash, and other information, e.g., block version and Timestamp. Block body holds the actual data that are either transaction records or the protected data. To implement verifiable transaction in distributed system, asymmetric cryptography technique is used along with hash function to enforce digital signature technique.

2. BLOCKCHAIN TECHNOLOGY

Provenance traceability and food authentication is the most efficient way to enhance food safety, and reduce fraud and food scandals since all relevant related to the product origin and its movements can be stored with minimal tampering risk. When each product item is produced, a corresponding digital token is attached to the item in order to ensure that it is tracked at a real-time manner.

Smart farming data management for better productivity control and management. In these IoT sensor-based systems, management and control decisions are made based on data collected from sensor networks. Robotic swarm control is proposed as a key concept in future smart farming and precision agriculture. UAVs and land robots could make either distributed or collaborative decisions based on data collected from robotic swarms and communications between them. Thus, data privacy and integrity are the most important component in such systems.

Efficiency improvement of the trade finance in the supply chain management and reduce transaction cost by removing intermediaries and audit cost via improved accountability in trading business process. This feature is powerful to support small scale farmers who are suffering from high cost of trade transactions and accidental losses

caused by environmental disasters or other uncertainties. Therefore, the straight forward use cases of blockchain in agriculture are to explore its financial functions to make these agricultural producers profitable.

Other information management systems: Blockchain based systems have also been deployed in many other agriculture related information management systems as the backbone infrastructure. For example, in a decentralized ledger-based contract management system is built to provide legal protection of the temporary agricultural workers in Italy. In addition, the payment of the salary can be settled via the crypto currency in this integrated system.

2.1. BLOCKCHAIN IMPLEMENTATION

Blockchain data on-chain process has several stages to secure data integrity in implementation of agricultural supply chain management. An example of a transaction record on-chain process is illustrated as follows:

Stage I: Before each transaction, payee address is firstly generated, and the payer makes payment to that address. After the payer finishes the payment, the transaction is digitally signed by both the transactions parties and broadcasted to all the participants (i.e. peers) in the network. From the participant side, after receiving a new transaction, the transaction is firstly verified, and if valid, collected into a block.

Stage II: Every participant packs the collected transaction records during a period into a block, and makes an effort to upload their block to the Blockchain. Regarding which participant can stand out from the peers, various distributed consensus schemes are introduced in previous section.

Stage III: When the new uploaded block is connected with the existing chain, it is broadcasted to all the other participants in the network. After receiving the block, other participants can verify all transactions in the block to ensure data integrity. Since each block in the chain requires the hash value of the previous hash, the participants can express their acceptance of specific chain by using its hash to create the next block. With repeating these stages, all the data can be stored in the decentralized database sequentially. It provides a transparent environment for all the stakeholders so that a trusted system is built across the network.

3. CHALLENGES AND AWARENESS

The commercialization of agricultural products involves several challenges. Access to market information is limited, farmers' literacy levels are low, and multiple distribution channels have eroded the pockets of farmers and consumers. Government funding to farmers is still in its infancy, and most small farmers still rely on local lenders, who have water and charge high interest rates. Too many vultures eat up the profits farmers should have made. Although we say that technology has improved, it has not yet reached the level of rural areas because it is limited to urban areas. There are multiple loopholes in the current legislation, and there is no organized and standardized marketing system for organizing the sale of agricultural products. Farmers must face so many difficulties and overcome various obstacles in order to obtain fair and reasonable sweat prices. Compared with traders, farmers generally have relatively little understanding of market information ,because in the market, the ability to obtain market information through communication systems is very poor. The status of the assets in the farmers' audiovisual and communication systems clearly shows that radio, television and television are the only assets owned by small farmers. Advanced communication systems, such as mobile phones, are owned by large and medium-sized farmers. Some large farmer also subscribed to agricultural magazines, such as Annadata, Krishimunnade, and Krishipete. However, traders with all modern and advanced communication tools can easily and regularly obtain market information. Knowledge of market information only implies local market arrivals and prices for all types of farmers. Some other important production and sales parameters, such as post harvest handling, grading and standardization, are unknown to small and medium farmers, but some large farmers have realized.

4. PROPOSED MODEL AND EXPERIMENTAL ANALYSIS

For an ordinary person, the development of this application will be a very useful resource. The ultimate goal of making it a responsible example is to eliminate the wounds and difficulties faced by farmers due to middlemen. Basically, this model will work in the following ways: 1. Get detailed product information from farmers/consumers. two. With the help of agricultural experts, considering the various inspection standards required, the obtained products are analyzed to meet customer expectations for quality. 3. Get the correct value from the verified product and load it into the application. The detailed product information provided by the farmer/consumer must be sufficient.

The product must be delivered by the seller to the location for inspection and verification. This can be done one by one, or the product can be sent by courier. Then send the product to an agricultural expert.
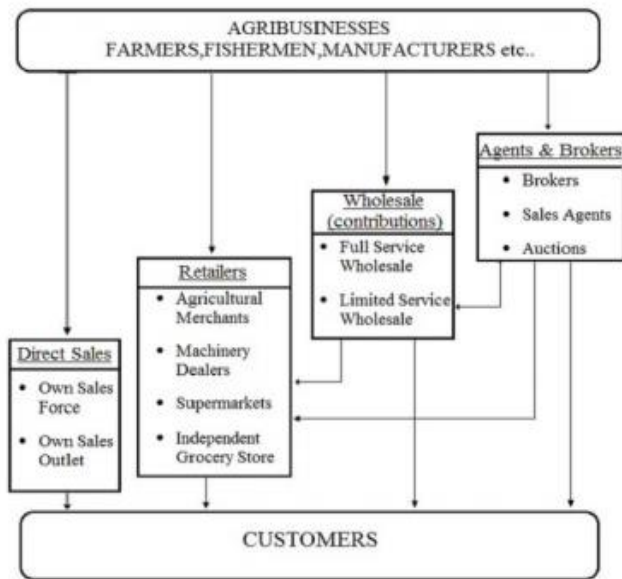
The experts are completely neutral and will analyze the quality of the products received without prejudice. According to certain standards, products are estimated according to their quality, quantity and price. According to the quality of the product, the grade is given. Some of the basic agricultural products that are widely grown are grains and legumes, seeds, spices, vegetables and fruits, fertilizers and feeds. In case farmers want to buy something from customers, the same method can be used.
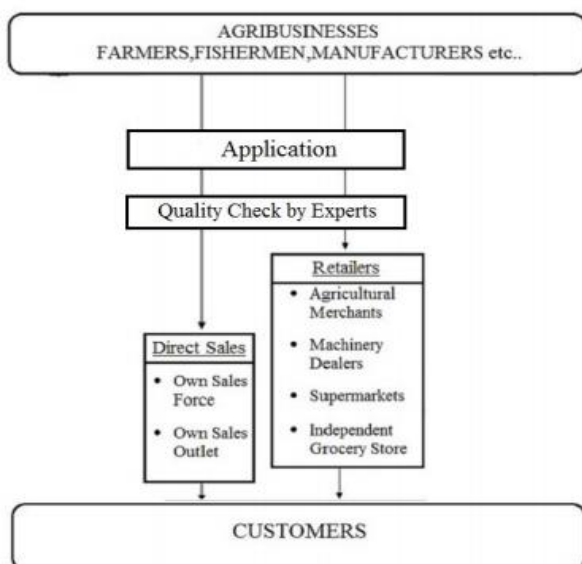

Fig. 2: Flow of farm products when our application is used

Next, since the correct value is predicted based on the quality determined by the agricultural expert, it is now time to load products for your transaction. The product will be

uploaded with the photo, including complete details, including its own brand, but the price is estimated by our experts, so it is convenient for buyers to purchase the product. In general, after the launch of this application, the needs of buyers and sellers will be satisfied, making them both very satisfied. The concept of this type of application has been called DIGITAL INDIA by the government of India, but it has not yet appeared. However, this app will stand out because it will be customized according to our regional language if necessary. Also, further updates to this manual may be implemented in the future update process. Let's have a deep understanding of how the product actually reaches the customer, goes through the hands of various intermediaries, and then reaches the customer or the retailer. In case the farmer wants to buy something from the customer, the same method can be used. Next, since the correct value is predicted based on the quality determined by the agricultural expert, it is now time to load the product for your transaction. The product will be uploaded with the photo, including complete details, including its own brand, but the price is estimated by our experts, so it is convenient for buyers to purchase the product. In general, after the launch of this application, the needs of buyers and sellers will be satisfied, making them both very satisfied. The Indian government has considered this application concept, DIGITAL INDIA, but it has not yet appeared. However, this app will stand out because it will be customized in our regional language if needed. In addition, this work can be further updated as part of the later scoring process. Let us understand how products actually reach customers, how to reach customers or retailers through various intermediaries.

5. CONCLUSION

There is no doubt that any marketing activity involves profit motives. At the same time, marketing activities must be based on certain values, principles and concepts, such as providing fair prices to farmers who work hard to cultivate. The introduction of necessary reforms and an appropriate price discovery mechanism through a standardized market system will help rationalize and strengthen agricultural sales. Through this mobile and web application, we can ensure that it is profitable for both farmers and consumers. Since agriculture is still considered to be the backbone of our country, we have a responsibility to pass it on from generation to generation and not let it break. We must relieve some of the pressure on the farmers so that they do not stop doing this sacred work, which is why our stomachs are full. If we look at the collective and comprehensive efforts of various departments targeting farmers, intermediaries, researchers, and managers, the commercialization of agriculture can be effective. Now is the time to develop meaningful agricultural marketing strategies

in innovative ways. The application will be one of the strategies to encourage farmers to continue to develop and ensure they get the right results.

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