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UTILIZING THE USER WALLET PLATFORM FOR BLOCKCHAIN-BASED SUGAR INCOMING LOGISTICS: A COMPREHENSIVE PLAN

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ABSTRACT: The food and agricultural supply chain of the pandemic has ample items, but fleets and other resources are scarce, making distribution difficult. Poor agricultural product quality leads to inferior products or lower prices. Neither outcome is desirable. The manufacturing, logistics, and sales departments of the XY factory's sugar supply chain were the study's primary participants. They were in charge of the entire supply chain. The smart contract provides users with a centralized wallet where they can view all transactions made by all parties. The wallet of the user can trace transactions back to the smart contract hash code and transaction time. Because it may retain transactions involving several entities, the wallet in issue is a unified entity.

***Keywords**:* Inbound Logistics, Block Chai, Wallet Platform

1.INTRODUCTION

Agriculture lags behind all other industries in terms of renewable technology, particularly computer technology. Pre- and post-harvest processing techniques are still used for tracing, storing, and sharing agricultural data. A multitude of risks influence agricultural supply chain activities, increasing uncertainty about the amount and quality of products that may impair commodity and component flow. In Indonesia, sugar is a staple. Regardless of the epidemic, many people avoid sweets.

Food and agriculture logistics are being hampered as a result of the pandemic. Limited vehicles, resources, wasting perishable commodities, and dropping prices owing to deteriorating quality all limit distribution. Due to uneven distribution, agricultural products must be used to their full capacity locally to ensure regional food security. Many demand projections are erroneous due to fluctuating inputs and processing materials.

Tracing product origins via complicated supply chains requires a trusted, impermeable, and adaptable information architecture that is transparent, impervious to illegal access, and adaptable to changing environments and regulations. Blockchain technology enables the secure and traceable compilation of data. Blockchain automates laborious operations, speeds up manufacturing, and improves trading decisions.

This ledger promotes multinational supply chain collaboration and makes data interchange easier.

Figure 1. An overview of the system architecture..

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Supply chain transparency and accountability can have an impact on decentralization and automation. Data transfers and execution outcomes are stored in extra blocks by the Blockchain, a decentralized, shared, and immutable public ledger. Private blockchain consortiums will build fresh blocks using a small number of trusted nodes. A Blockchain-based product traceability system that uses smart contracts to construct a chain that can be traced back to its origin to chronicle the history of every product transfer on a distributed ledger.

The approach updates the Blockchain state by using variable distribution control of data transactions, giving automatic information feedback, intrusion detection, and contract execution control. Blockchain executes SC smart contracts as transactions. The international growth of blockchain technology is critical to smart contracts. Ethereum Blockchain contracts enable verifiable closed-bid auctions.

Smart contracts use Blockchain technology to implement immutable, traceable transactions, lowering transaction costs such as arbitration and enforcement fees. The digital wallet, the most recent financial technology, simplifies and accelerates money transfers. In order to achieve precision and transparency in transaction distribution data and to become a cutting-edge strategy, technology, and data security component, the supply chain business process requires a wallet. Sugar milling divisions keep this wallet according to contract.

A smart contract architecture was created to provide customers with a unique wallet for all incoming production volume group transactions in the sugar supply chain at factory XY, including production, logistics, and sales.

The environment border sugar mill uses both domestically grown and imported unprocessed sugar. Production, logistics, and sales are critical functions. Tracking the supply chain investigates the progression of corporate activities from processing to payments. An event-driven model is depicted in Figure 1.

Players can share information more easily if supply chain data is monitored. It is feasible to track product volumes between production, logistics, and sales by customizing the application. Business process automation can decrease bottlenecks and product availability confirmation time with this quick response. This application improves order management and product inventory expansion. When smart contracts and an Ethereum account are present, each network node is a node.

We assume that the same batch of sugar retains the same quality and structure during the manufacturing process. Products from different lots must be reregistered [13]. This strategy modernizes batch product transfer by assigning production batch numbers to each product batch. A batch number is used to identify non-mass-produced products.

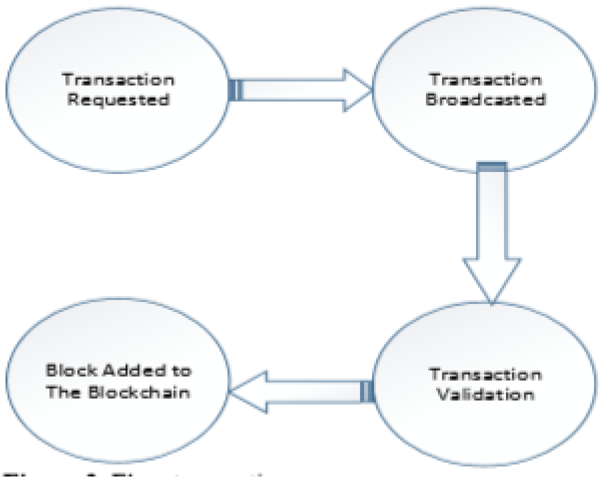

Figure 2 transmitting current.

Smart contracts allow players to engage with one another. They also provide process status updates via data delivery notifications. This research makes use of smart contracts to connect others as users or administrators. Each contract deployed to an Ethereum-based Blockchain platform contributes to the three basic processes. The links between these contracts and subprocesses are described in the following section.

To log in, this individual inputs their username and password. Metamask serves as the foundation

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for the wallet. The stakeholders receive the entered data before the sender, production, requests a transaction. A peer-to-peer (P2P) network that is interconnected posts the transaction request. A new smart contract requires a new hash and data transfers to add constrained blocks. The hash is confirmed by the node using an algorithm.

2. METHODS

Data collection outside of the blockchain is costly and time-consuming. Email, supply chain data, product provenance, and quality control parameters may all be tracked automatically using blockchain technology. This is ideal for data sharing. Blockchain increases trust. Blockchain is often regarded as the most significant technology innovation since the internet.

The novel approach to information encryption is required for the formal foundation for product traceability in supply chain management.

Data is unmodifiable after a transaction has been committed. Digitally authenticating historical transaction chains is not possible. Data integrity is ensured by cryptography, data accessibility is ensured by public access, and every participant has equal access to and control over the Blockchain. Participants put their trust in the Blockchain network rather than in third parties. Although logic-based languages may be ideal for blockchain testing with Ethereum and a Ropsten Metamask wallet simulation, procedural languages are commonly used to develop smart contracts.

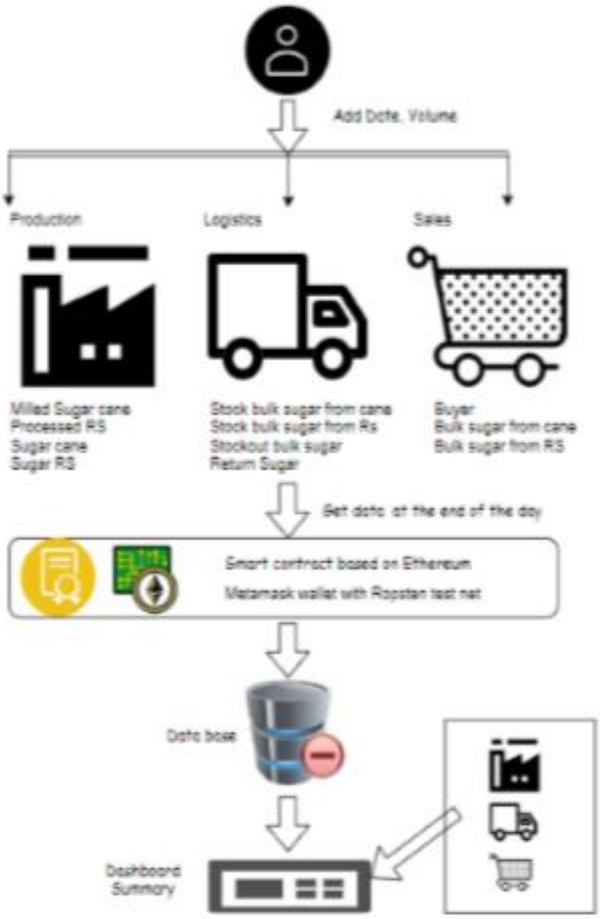

Figure3. Users can utilize a blockchain wallet application.

3. RESULTS AND DISCUSSION

Dates and totals based on manufacturing, logistics, and sales data should be added. For the data transaction search, the console will provide a hash code that can be copied and entered into Etherscan.

The hash codes or algorithms connected with user wallet transactions are depicted in Figure 6. Because this is a single wallet, the hash is generated by the user. The manufacturing, shipping, and sales divisions can keep track of the date and quantity of input for each product, such as sugar cane or raw sugar.

To modernize the product transfer method, each shipment is allocated a contract address. Each batch is a product transmission, whereas each product is a list of batches.

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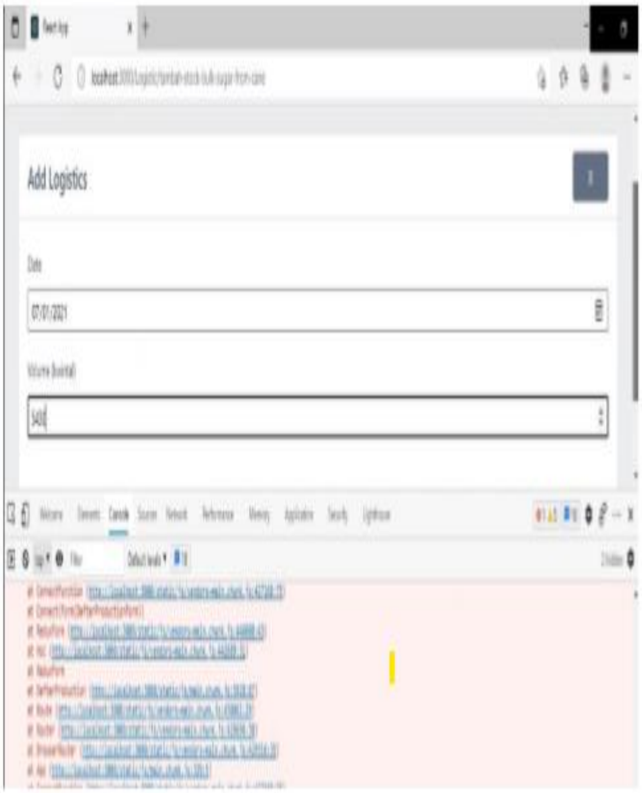

Figure4. The gathering of data.

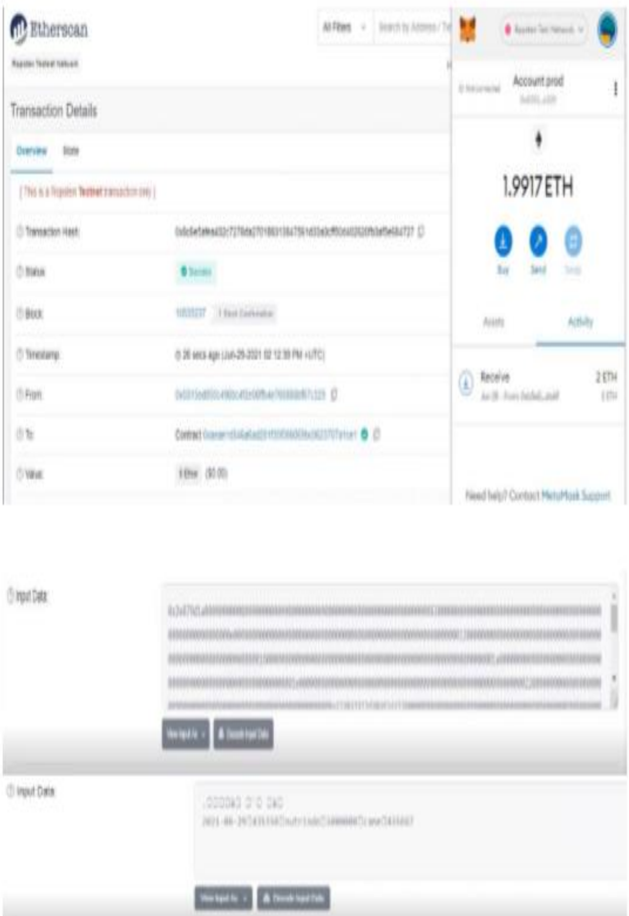

Figure 5. Deal specifics.

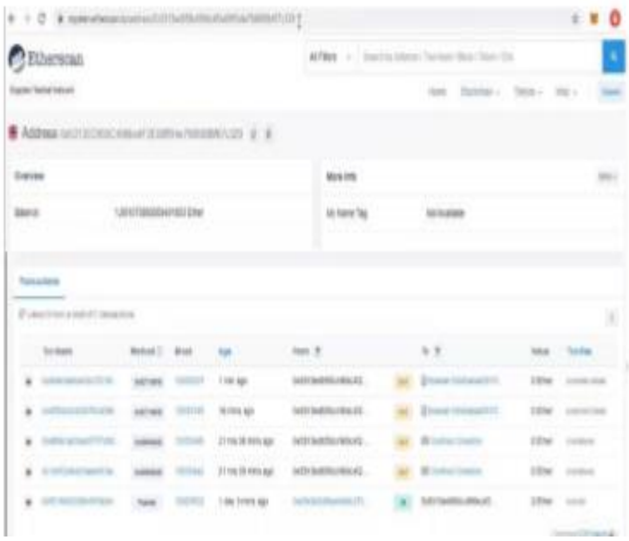

Figure6 A brief summary of transactions from a certain period is provided in this report..

Give the product code and batch number to see your items' transfer history. Each contract contains a permission list of accounts that can renew.

The system's API can't handle factory authentication, thus it must be moved. Middleware performs two tasks in centralized databases. First, it simplifies API communication between programs. Connecting the factory app and its bitcoin factory framework app is the goal. Front and back ends are on localhost 3000 and 8000, respectively.

Blockchain "smart contracts" are computer code or programs that work together. Put smart contracts on the Blockchain once and you can't edit them. It supports smart contracts in transaction systems. Smart contracts on the Blockchain are one-time use contracts. These contracts must have error-free software code.

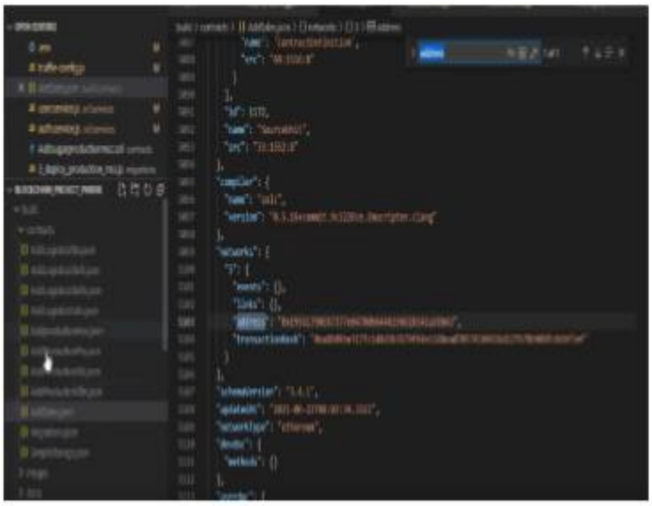

Figure 7. Code for smart contracts..

Smart contracts are frequently implemented on Blockchain platforms, therefore their software code must be reviewed. Audits identify and correct computer code problems.

Blockchain-based sugar volume traceability employs smart contracts to store all transactions in an unchangeable record. A transaction response system in the app ensures wallet data is transferred safely. When a user enters in to their wallet, the Blockchain system records and stores data transactions and release events forever. However, all supply chain nodes controlled by one place can cooperate openly and trustworthily.

We're also building a DApp on truffle. This involves running smart contracts and reviewing their code on Etherscan. Our method uses the local memory-only Ropsten proof of work Metamask wallet. We are also creating a decentralized web interface for Ethereum Blockchain user interaction. The security analysis found data accessibility, tamper-resistance, and man-in-the-middle resistance in our system. Officializing smart contracts has fixed numerous issues and made them safer. But as this new field grows, security weaknesses will appear. Blockchain researchers, cryptography experts, and formal methods practitioners must collaborate. Our study's major goal is to unite the community by highlighting the progress made and the issues that must be addressed to advance smart contracts and Blockchain technology. This work should greatly expand the field's literature. This is especially true for future empirical research of smart contract officialization methods. If done correctly, these research may help us understand how well these strategies operate and illuminate accuracy and computational costs.

4. CONCLUSION

When a smart contract design is implemented on Ethereum using the Metamask test-net wallet Ropsten, which is linked to a username, it manages data transactions throughout their lifecycle, including production, logistics, and sales. The constructed wallet has numerous features, including the ability to see the transaction data senders, the transaction date, and a process dashboard. Blockchain technology makes it easy to find the person or organization that modified or falsified data. One benefit is transparency, inability to modify, and safety from data collectors.Since it works with more company-controlled sugar mills, the wallet platform software might be utilized as a traceability example. Future dangers must be considered.

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