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Blockchain Based Milk Delivery Platform For Dairy Farmers

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Abstract: The dairy industry, which encompasses the full dairy value chain, currently provides jobs and financial assistance to over 2 million people. The majority of dairy farmers are small-scale landowners, and they rely on local milk collection services, who manually record milk supply transactions in hardcopy inventory files held in their offices. These centres have been known to change and remove these documents in order to decrease their payments to farmers. The purpose of this work is to explore the potential application of blockchain technology in milk supply among smallholder farmers in rural parts of developing nations in order to establish transparency, dependability, and justice in the payment of these farmers. We seek to develop a farmer-centric blockchain-based platform to protect farmers from predatory intermediaries in the milk supply chain who tricks on ignorant and trusting farmers.

Keywords: Blockchain, Dairy Farmers, Milk Delivery Platform

I.INTRODUCTION

Information and Communication Technology (ICT) has made a name for itself as an important tool for producing, organizing, storing and disseminating information effectively and efficiently. To increase agricultural productivity, ICT has been used to provide farmers with timely information on issues such as weather forecasts, market information and prices, diseases and pest control, among other things. ICT, for example, is linked to increased agricultural productivity, diversification of food crops, job creation, and increased access to cash crop markets. Even in the most remote rural areas, ICT has the potential to reach the poor and promote livelihood opportunities as a means of improving agricultural productivity.

Modern blockchain-like ICTs, widely used in the commercial, industrial, and economic spheres, are among these ICTs. Blockchain is considered a distraction and a novelty. This is due to the blockchain ability to support distributed transactions built on transparent and consistent infrastructure. Blockchain operations are naturally reliable and irreversible because they rely on cryptographic hash functions in hash-chain trading (also known as blocks) on the blockchain network. Records on the blockchain cannot be changed or modified. The next block of exchanges is just added after the complex numerical problem is solved and checked by the agreement system. Each new block has a unique cryptographic key that is created because of the data from the previous block. Blockchains are regularly audited by a shared organization and are used as a loosely distributed record, where centers mostly adhere to a convention of handing over and approving new blocks. Despite the fact that blockchain records are not immutable because forks are conceivable, blockchains can be considered safe by design and represent an extended processing framework with high adaptability to non-critical failures. Most blockchain projects deal with three main features: decentralization, versatility, and security. Designers are constantly trying to adjust these angles so that no one is at risk. You can find a detailed analysis of the structure and structure of the blockchain in future studies.

II.LITERATURE SURVEY

Fredrick AWUOR et.al[1] In this paper they are illustrating the contribution of ICT to food security and sustainability of agriculture in developing countries. ICTs in agriculture have the potential to facilitate greater access to information that drive or support knowledge sharing. It is essential in providing the creation, management, storage and retrieval of any relevant data. Targeted Oriented Database is used to store the information.

Rizka Tauria Nuryadi et.al[2] their research plans to understand in the network of dairy production, especially the circumstances that dairy farmers and dairy farmers were looking at, and to propose a new action plan for dairy enterprises to enable and further develop the seriousness of dairy farmers. They used optional information research to understand what was happening upstream of the dairy chain and collaborative research to gain client buy-in as the rationale for a new dairy improvement action plan.

Shuvam Shingh et.al[3] in this post, they have tried to introduce the use of Blockchain innovation in the field of dairy products. It focuses on leveraging blockchain innovation to further develop the dairy supply chain framework. This

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paper presents how this innovation can be used within the milk production network and outlines its expected benefits for the various partners and the dairy industry as a whole. Despite the fact that there are various expected benefits of utilizing a blockchain-based milk production network framework, there are numerous difficulties in using it. Blockchain innovation is a new innovation, and therefore entrepreneurs are not informed if they will get higher installments for the exorbitant cost of using it.

Andreas Kamilaris, Agusti Fonts et al[4] in this article they examines the impact of blockchain technology in agriculture and food supply chain, presents existing ongoing projects and initiatives, and discusses overall implications, challenges and potential, with a critical view over the maturity of these projects. The findings indicate that blockchain is a promising technology towards a transparent supply chain of food, with many ongoing initiatives in various food products and food-related issues, but many barriers and challenges still exist, which hinder its wider popularity among farmers and systems. These challenges involve technical aspects, education, policies and regulatory frameworks.

Zi-Yu Liu et.al[5] In addition, this paper analyzes the interconnection of blockchain technology characteristics such as smart contract, information sharing, traceability and performance improvement requirements. The author incorporates the alliance chain into the fresh food e-commerce supply chain and proposes a four-layer blockchain information platform model: application layer, contract layer, network layer, and data layer, to optimize and improve the performance of the fresh food e-commerce supply chain. What's more, the Stackelberg game model between the supplier and the e-commerce platform was created to study and compare the profit changes in the fresh food e-commerce supply chain before and after the application of the blockchain information platform. Finally, the result of the Stackelberg game is numerically simulated by Matlab software. -e results show that blockchain technology is an impetus for the development of the fresh food e-commerce supply chain to a higher level of management, coordination and integration of the entire industrial chain. Investing in a blockchain system within a certain budget range can not only improve product reliability, but also improve the performance of each major component of the fresh food e-commerce supply chain as well as the overall performance.

Aparnna V.P et.al[6] tells Blockchain technology offers a solution to a more integrated risk management solution across the supply chain, while also enhancing the value of conventional audit-based systems. Using blockchain technology will help create an immutable contract between participants in a supply chain, allowing for more transparency. Blockchain is being hailed as a promising new tool in the fight to ensure consumer food safety. It is part of a wider system aimed at strengthening the value of traditional auditbased solutions while also improving risk managementacross the entire supply chain.

Xin Zhang et.al[7] In this paper they established an information security management
system for the grain supply chain based on blockchain. Customized Smart Contracts are designed to achieve business data interaction in industrial chain. Complete structure of the grain supply chain is presented. The proposed system can achieve the sharing and exchange of information in the entire grian supply chain, ensure the safety and reliability of information storage and transmission, and prevent “information islands” and tampering.

M. Nakasumi[8] In this paper, they proposed a new blockchain scheme for information sharing. It brings many benefits to supply chain management. Their platform makes this possible by combining blockchain with a homomorphic encryption solution. Users do not have to trust any third party and are always aware of the data that is collected about them and how it is used. In addition, theblockchain recognizes users as the owners of their encrypted data.

Saveen A. Abeyratne, Radmehr P. Monfared[9] In this paper, the authors review some of the main characteristics of Blockchain technology and discuss potential application domains. The proposed system makes it possible to collect a huge amount of data about products and users in the manufacturing industry, which can prove to be beneficial to various people, organizations, governments and researchers. For example, this allows consumers to easily access accurate data specific to any product that has been produced through a blockchain-enabled supply chain, allowing them to make better purchasing decisions.

Satoshi Nakamoto[10] Designed a system for electronic transactions without relying on trust. They started with the usual framework of coins made from digital signatures, which provides strong ownership control, but is incomplete without a way to prevent double spending. To solve this, they designed a peer-to-peer network using proof-of-work to record a public history of transactions that quickly becomes computationally impractical for an attacker to change if honest nodes control most of the CPU power. The network is robust in its unstructured simplicity. Nodes all work at once with little coordination. There is no need to identify them as messages are not directed to any specific location and only need to be delivered on a best effort basis. Nodes can leave and rejoin the network at will, accepting the proof-of-work chain as proof what happened while they were gone.

III. PROPOSED SYSTEM

The proposed solution has obligations that should facilitate automatic recording of milk delivery to the blockchain manager, and consider farmers' payments based on records in the milk supply blockchain manager. Farmers deliver milk to MBC, and can access milk delivery records from the blockchain manager using the Web application. They may

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also use this as collateral for financial assistance. The team conducts continuous needs assessment and preparedness for a digital solution between farmers and workers, and redesigns the blockchain milk delivery manager accordingly; trains farmers and workers in the blockchain manager and supports the solution.

IMPLEMENTATION AND PROCESS

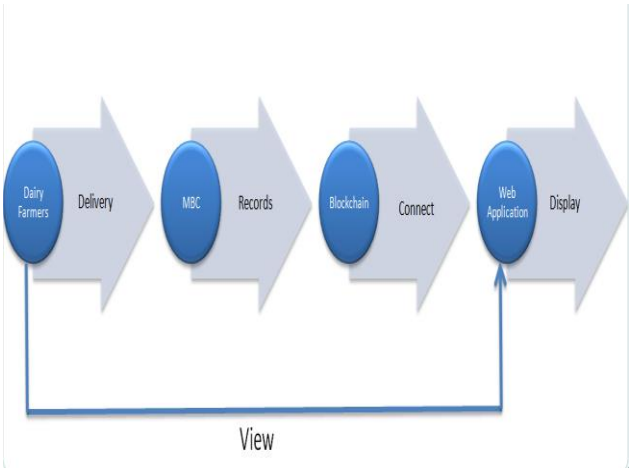

Fig 1 Block Diagram

A. Block Diagram

In is the block diagram Figure1 of the project which shows the working flow of the project. The Farmers Delivers the milk to the MBCs and the details of quantity, price and date is recorded in the blockchain which is connected to the web app. Through this web app farmers can view their information about the milk delivery and also staff can also generate the total report of the amount for the milk delivered by each farmer. They may also use this as collateral for financial assistance.

B. Technique of Block-Chain

The blockchain process consists of two main components:

1. Distributed book. This ledger is a data store in the blockchain network that has a complete history of all transactions.
2. Peer-to-peer network (P2P network). Such a network should be represented as a communication platform divided into areas where each group has equal power. Any group can start a communication session. A P2P network allows each network (peer) to function as both a client and a server.

These two components together form a distributed record using several other (currently available) techniques or techniques such as SHA-256 and hash-cash. Timestamps, ledgers and digital signatures have been around for a long time, but this combination has opened the door to more and more developments.

The beginning of this "transaction history" is the first block called Genesis-blocks. This first block is basically a situation that everyone agrees on.

IV.EXPERIMENTAL RESULTS

We create a command truffle compile, which integrates Solidity into EVM byte code. Next we create a new migration deploy contracts on migration / directory, which is used to move the integrated contract to the blockchain. Truffle defines migration as a feed script intended to move smart application contracts from one region to another. Before we can move on we need to have a blockchain running on our local machine.

We can now use truffle migrate on our terminal to move the contract to the blockchain. Truffle configuration provides a platform for selecting the Host-Chain network hosting server and its port number, and this version of the contracts created for this application will also be selected. Truffle setting provides a link between Host, Host that uses the Blockchain network and contracts with other JS scripts to integrate and function as an application. In the below Figure2 we can see the node/block created. This node stores the data and consist of a hash value which is used by another node to link one another

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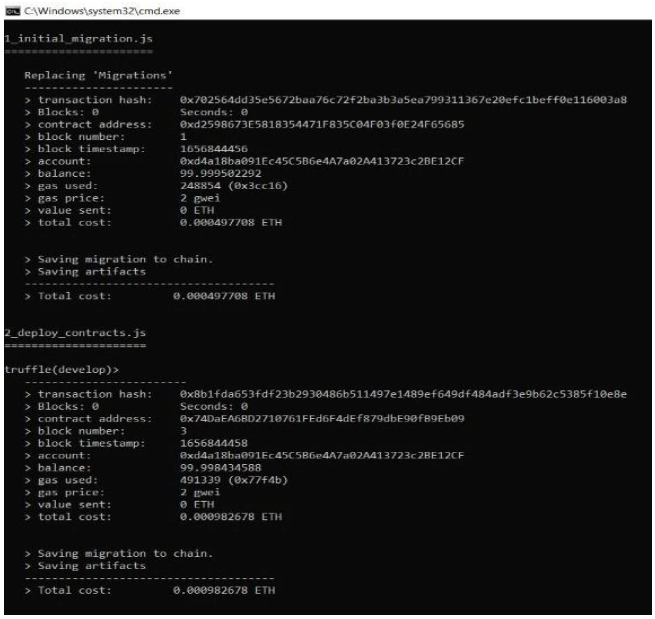

Figure 2 Node Creation

V CONCLUSION

We developed a blockchain-based milk delivery system for rural farmers in order to encourage transparency and equity in the payment of dairy producers. The technology uses blockchain to enable the creation of documents that are unchangeable and unrepudiable by any parties, including farmers and nearby milk collection facilities. Farmers can use these records as collateral for financial assistance in order to forecast the future of their dairy operation and show that it is viable. The platform is managed and new blocks can be added to the network.

In the future, different dairy knowledge can be added and a large number of fields can be used for farmers and workers. Different ids can be given to sticks and farmers to sign in.

Verification can be added to sign in. Purchasing products online can also be done.

Unified Registration System: Single advanced stage expels the bureaucratic silos and makes a difference in driving more prominent proficiency and lessening inaccuracies/forgeries.

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