



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 10, Issue 6, June 2022

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.165



9940 572 462



6381 907 438



ijircce@gmail.com



www.ijircce.com

Tractor Hiring System Using Blockchain Technology

Yash Kumar Sharma, Shreyas V, Sahana N, Dr. P. Vijayakarhik

B.E. Students, Dept. of ISE, Sir M. Visvesvaraya Institute of Technology, Bangalore, Karnataka, India

Head of Department, Dept. of ISE, Sir M. Visvesvaraya Institute of Technology, Bangalore, Karnataka, India

ABSTRACT: We live in a country where half the population is dependent on farming as their livelihood. However, only one out of ten farmers can afford expensive equipment like tractors. This blockchain-based tractor hiring application aims at helping farmers hire tractors at an affordable price. It is highly convenient as the farmers don't have to bear the cost of owning or maintaining a tractor. The use of blockchain technology helps in introducing a more transparent tractor rental service and makes the payments more secure. Farmers who can't afford to buy tractors are now able to hire tractors for short periods at minimal costs without the presence of any third party. Problems like taking huge loans to buy tractors and not being able to repay them can be avoided now.

KEYWORDS: Blockchain Technology; tractors; hashing; smart contract;

I. INTRODUCTION

In this blockchain-based project, farmers can hire tractors for short periods based on their needs for a very affordable price. This application becomes highly convenient as the farmers don't have to bear the cost of owning or maintaining the tractors. this project forms a link between farmers who want to rent out their equipment and those who wish to hire it. By making use of blockchain technology farmers can hire tractors easily and make payments safely. the application outputs the rental charges which the user must pay the supplier. blockchain also helps in removing the presence of any third party, thereby making the entire application more secure and convenient.

1.1 PROBLEM STATEMENT

Many farmers are unable to hire a tractor for a reasonable price or are unable to locate a tractor quickly. Sometimes, farmers are unaware of the tractor's price; as a result, the tractor provider simply deceives the farmers and defrauds them by taking extra money. Farmers may simply overcome such obstacles with the help of this project, which allows them to conveniently find tractors and other mechanisms for their usage. This blockchain-based project aims to assist farmers in obtaining tractors at a lower cost without the need for third-party apps or the payment of high processing fees.

1.2 OBJECTIVE

- To build a link between farmers who want to hire equipment and those who want to rent it out.
- To develop a Blockchain-based application that assists farmers in hiring tractors.
- Using Blockchain Technology, enable safe and secure transactions between the supplier and the user.
- Farmers' time and money will be saved.

II. RELATED WORK

Android applications are used by the current tractor-sharing platforms to rent out tractors. Four modules make up the application: the Login module, the Store List module, the Equipment List module, the Tractor List module, and the Booking module. To obtain an OTP and log in successfully, the user must enter their credentials into the login module. The store list module provides the user with information about each nearby store, including its address, pin code, and phone number. The list of agricultural machinery can be found in the equipment list module. According to their agricultural needs, the tractor list module covers several types of tractors. Operations like renting a tractor or other



equipment are handled through the booking module. Once the user provides the number of hours, date, and time as inputs, the booking is confirmed, and the received output displays the total cost of the tractor and equipment [1]

Helbiz will be the following application we discuss. The guiding principle of Helbiz is to develop and integrate a system of transportation that rewards us for utilizing it. By offering HBZ ERC-20 tokens, this project uses a well-known implementation of a blockchain-based car-sharing platform. We can also earn tokens by giving insurance firms our driving data. The only effort to develop a smartphone app for renting electric scooters is Helbiz. When we want to hire a scooter, we just look for one that is available in the app, scan the QR code, and then pay with HBZ tokens. The program proposes to use a credit card to purchase HBZ tokens if we do not have enough tokens. Since all of the scooters are in Italy, we are unable to evaluate this option [2]

The rental terms and the rental charge are confirmed, and an online application is then submitted after the user searches the agricultural machinery database (created by the administrator) and chooses the required equipment. The database server stores the application's contents, and the administrator maintains the fleet of agricultural equipment by running reservation queries against it. To assure the effective operation and open management of government-subsidized agricultural machinery rental firms, this study was carried out to design a web-based business management system. This article makes it quite apparent that the user will receive agricultural equipment from the government [3]

III. PROPOSED SYSTEM

This approach was created to address the issues that commonly arise when farmers need to borrow a tractor for agricultural use. There are 3 main modules.

In this module, blocks are created. In a blockchain, information is encrypted and kept in units called blocks. Long numbers that contain both new transaction information and encrypted information from earlier blocks are used to identify blocks. The following data is stored in each block of our application: the index, transaction data, time stamp, and prior hash. The initial stage in this program is to create these blocks.

In this module, proof of work is used to verify the transaction and once the block is verified, hashing is used to link the current block to the blockchain. The original consensus algorithm in a blockchain network is called Proof of Work (PoW). By allowing the participants to validate the blocks, this consensus process works by requiring users or network members to apply hashing techniques to determine the right answer to a mathematical problem. Hashing is the process by which a particular algorithm converts input data of arbitrary length into a string of a predetermined length. Each block in the blockchain has a unique identifier thanks to hashing, which means that altering the blockchain will have unavoidable consequences.

In this last module, smart contracts are used. Simply put, smart contracts are blockchain-based algorithms that execute when certain criteria are met. Simple "if/when...then" phrases that are typed into code and placed on a blockchain are how smart contracts operate. When predefined circumstances have been verified to have been met, a network of computers will carry out the actions.

IV. SYSTEM DESIGN

The data of the blockchain is not stored on a central server or system. Since the data is present on every node and is open to public scrutiny, this method permits the notarization of the data. A computer linked to the Blockchain Network is referred to as a node. Using the client, Node connects to Blockchain. The client aids in transaction propagation and validation on the Blockchain. A copy of the Blockchain data is downloaded into the system when a computer connects to the Blockchain and the node updates to the most recent block of data on the Blockchain. The Blockchain-connected node that aids with a transaction's execution in exchange for a reward is known as a miner.

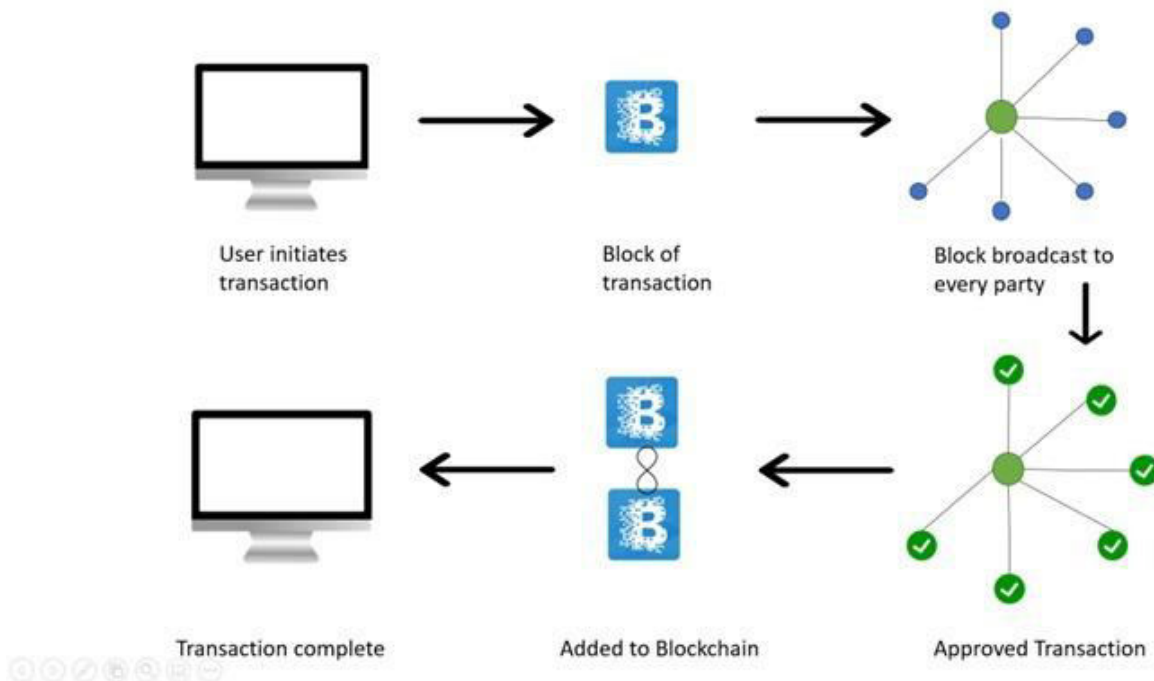


Fig 1. The distributed database structure of blockchain.

V. METHODOLOGY

There are three modules to this.

A block is a place in a blockchain where information is stored and encrypted. Blocks are identified by long numbers that include encrypted transaction information from previous blocks and new transaction information. In our application each block stores the following information: index, transaction data, time-stamp, and previous hash. Creating these blocks from the first step in this application.

Proof of work forms the second step. Proof of Work (PoW) is the original consensus algorithm in a blockchain network. The algorithm is used to confirm the transaction. This consensus algorithm works by requiring users or network participants to use hashing algorithms to find the correct solution to a mathematical problem by allowing the participants to validate the blocks.

Once the block is validated, we use hashing to link the blocks to the chain. Hashing refers to the transformation and generation of input data of any length into a string of a fixed size, which is performed by a specific algorithm. Thanks to hashing in the blockchain, each block is assigned an original identifier, which will entail the irreversible consequences of changing the blockchain.

Smart contracts are simply programs stored on a blockchain that run when predetermined conditions are met. They are typically used to automate an agreement's execution so that all participants can be immediately certain of the outcome, without an intermediary's involvement or time loss. They can also automate a workflow, triggering the next action when conditions are met.

Smart contracts work by following simple "if/when...then..." statements that are written into code on a blockchain. A network of computers executes the actions when predetermined conditions have been met and verified. In our application, these actions include balance retrieval, booking details, owner deposit, client deposit, and withdraw earnings by the owner. The blockchain is then updated when the transaction is completed. That means the transaction cannot be changed, and only people who have been granted permission can see the results.

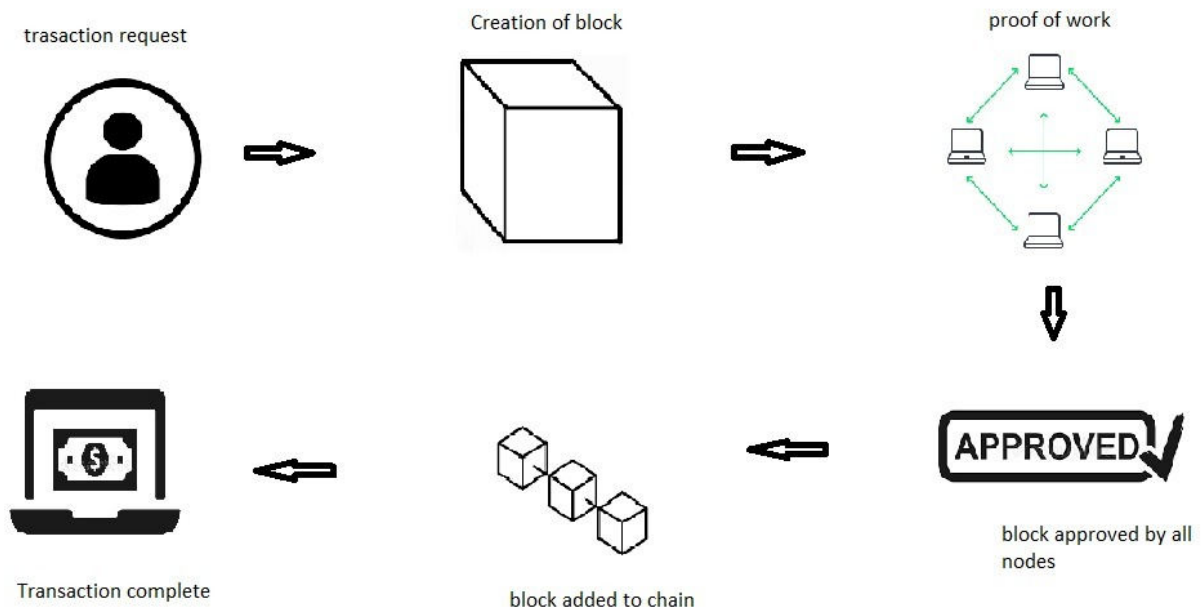


Fig 2. Working of a blockchain transaction

VI. ADVANTAGES AND APPLICATION

There are various advantages of this application –

- **Improve Business Processes:** Be able to leverage internet technologies to improve the demand and supply process for tractors.
- **Online Tractor Reservation:** An online tool that allows a user to reserve a tractor in advance of their planned use date or time.
- **Availability:** Tractors can be reserved immediately without leaving the house.
- **Transparency:** Users will receive information about the tractor and equipment, as well as advance notice of the rent due based on the hour of service.
- **Enhanced security:** Your information is sensitive and vital, and blockchain has the potential to drastically alter how it is regarded. Blockchain helps to prevent fraud and unlawful behavior by producing a record that can't be changed and is encrypted end-to-end. On the blockchain, privacy concerns can be handled by anonymizing personal data and limiting access through permissions. Because data is stored over a network of computers rather than on a single server, hackers have a tough time accessing it.
- **Increased efficiency and speed:** Traditional paper-based processes are inefficient, prone to human error, and frequently necessitate third-party intervention. Transactions may be conducted faster and more efficiently by using blockchain to streamline these processes. Documentation, as well as transaction data, can be recorded on the blockchain, obviating the need for paper exchange. Because there is no need to reconcile different ledgers, clearing and settlement can be completed significantly more quickly.
- **Automation:** Smart contracts can even automate transactions, increasing your efficiency and speeding up the process even more. The next stage in the transaction or process is automatically started after pre-specified conditions are met. Smart contracts eliminate the need for human intervention and the reliance on third parties to verify that contract requirements have been satisfied. When a customer provides all necessary evidence to file a claim, for example, the claim can be immediately settled and paid.



VI. RESULTS

Based on the number of hours entered by the user, this system determines the rental fee for renting tractors. To maintain track of the amount transacted, it shows the owner's and the customer's balances before and after the payment. The transactions happen safely and securely. Farmers can successfully hire tractors using this approach without the assistance of third parties. Farmers now no longer need to bear the expense of owning or maintaining the tractors.

VIII. CONCLUSIONS

We get to the conclusion that the problem statement is eliminated by the deployment of the project known as the "Tractor Sharing System using Blockchain Technology." Farmers can hire tractors through this tractor-sharing system and carry out transactions safely. In the conclusion, the entire price is shown. The supplier and the user establish a direct relationship as a result of this application. Farmers who want to rent out their tractors and equipment will benefit from the elimination of the use of third parties. Smart contract usage is reliable and does not lead to any errors. This application is cost-effective and time-saving.

REFERENCES

1. Tractor Hiring Application for Farmers, Krunal Bagaitkar, Khoshant Lande, Anklesha Welekar, Aman Yadav, Anshul Tambe, Amruta Chopade
2. Helbiz, "Helbiz Mobility System." Accessed: 2018-12-07.
3. Bruno A. Neumann-Saavedra a,*, Patrick Vogel a, Dirk C. Mattfeld a- Anticipatory service network design of bike sharing systems-18th Euro Working Group on Transportation, EWGT 2015, 14-16 July 2015.
4. Bryant James Jr. (2013), "Finding the optimal locations for bike sharing stations: a case study within the city of Richmond, Virginia", Thesis submitted to the Graduate Faculty of George Mason University
5. Amey S. Dodal, Abhijeet Kumar, Dharmendra Lodha. 'Bike Sharing & Rental System'. Computer Engineering Pune India.



INNO  SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.165

 **doi**[®]
cross **ref**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details