

Blockchain Based Farmer's Fund Distribution System

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Abstract- *In the contemporary landscape, the agricultural sector grapples with a host of real-time problems stemming from outdated fund distribution methodologies. The existing systems exhibit a lamentable lack of efficiency, transparency, and accountability, exacerbating the hardships endured by farmers, students, and entrepreneurs seeking essential financial support. This predicament, with its associated bottlenecks and corruption vulnerabilities, obstructs the timely allocation of funds, hindering not only the progress of individual beneficiaries but also the overall socioeconomic development of the region. In response to these pressing issues, our project emerges as a beacon of hope and transformation. By harnessing the disruptive potential of blockchain technology, we endeavour to revolutionize the fund distribution process, offering a panacea for these systemic challenges. Our multifaceted solution encompasses a user-friendly mobile application tailored for farmers, real-time dashboards that provide government authorities with transparent oversight, and an immutable blockchain ledger that indelibly records every transaction. These technological innovations coalesce to forge a system that not only empowers beneficiaries by affording them unfettered access to critical financial support but also paves the path to a progressive future. The project's significance extends far beyond fund distribution; it stands as a herald of governmental service modernization, data management reform, and financial inclusivity. By directly addressing these persistent and dynamic challenges, we endeavour to elevate the agricultural sector and, in turn, the entire socioeconomic landscape, all while setting a standard for transparent governance and equitable development.*

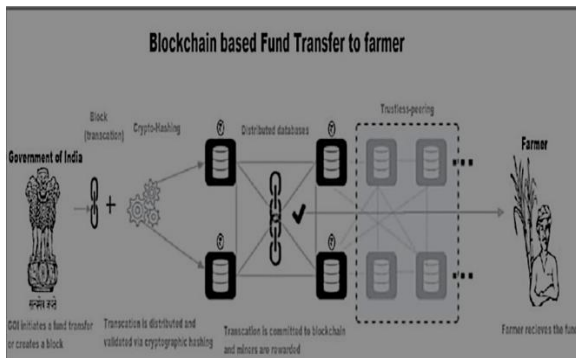
Indexed Terms- *Farmers' fund distribution, Agricultural subsidies, Direct benefit transfer (DBT), Agricultural financing, working Of fund distribution*

I. INTRODUCTION

In the current scenario, the agricultural sector faces a rush of real-time problems that are symptomatic of insufficiency in traditional fund distribution systems. These issues that lie in disability, corruption and openness are contained on a heavy tariff on the dreams of farmers' livelihoods, educational ambitions from students and entrepreneurship of hopeful businessmen. The results are a complex network of delays and obstacles that stand as a malignant obstacle to progress in the agricultural sector, not only the economic prosperity of these, but also the broad regional development goals. Between this background of systemic challenges, our project appears as a lighthouse for innovation and a catalyst for change. We are willing to exploit the transformation power of blockchain technology to bring revolution in the fund's distribution process, which crosses the traditional and beginning limit in the time of traditional, traditional and responsible financial support. There is a mobile application in the center of this effort, designed with extreme user friendship, tailored for very agricultural base: Farmer. This application opens the entrance to registration registration and ensures data management carefully, with fixed control in their hands if livelihood depends on it. In addition, we have designed a set of real-time dashboards, which are complicated for the sensible eyes of government officials, where the audit meets openness, enables an incincy of blockchain technology, an irreversible account that records transactions with an indelible durability. This innovation is here that we win the audience of fraud, corruption and manipulation. Each transaction, each allocation, Country. Accessibility and access to adequate, timely and low price from institutional sources are of great importance for small and marginal farmers. Credit is an important means of improving the welfare of the poor that occur evenly through consumption that reduces their vulnerability to short-term income. Agricultural loans are one of the needs

of farmers to increase agricultural production in the process of agricultural development of a country 2. With other input, credits are required for the installation of permanent and profitable agricultural systems. Most of the Indian farmers are widely small manufacturers in agricultural activities in areas with different capacity. Experience has shown that easy access to financial services to affordable costs affects productivity, real estate, income and food security in the countryside in the countryside. Many loans in microfinancing institutions are used for agricultural production, trade, processing and transport, resulting in an increase in the use of agricultural inserts and increasing production of agricultural production 3. Microcrade played a positive role in agricultural development, which increased crop production 4 significantly.

There are many factors that prevent particularly small and marginal farmers from reaching agricultural loans and financial services and are greatly affected by age, gender, size of landhold and the required amount required in the role of agent. In addition, low negotiating power, bureaucracy and procedural formalities, capital -based debt and financial institutions are required guidelines and corruption



II. OBJECTIVES

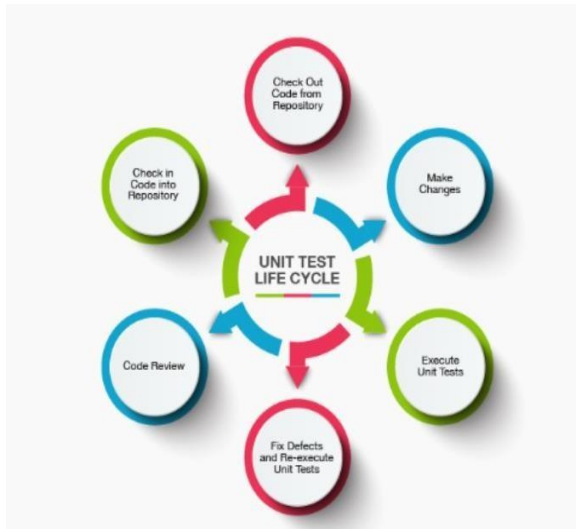
- Establish an efficient fund distribution mechanism.
- Implement blockchain technology for transparency and accountability.
- Streamline data management for accuracy and decisionmaking.
- Seamlessly integrate new government schemes.
- Promote collaboration among various government levels and stakeholders.

- Prioritize data privacy and security measures.
- Modernize government services through technology.
- Contribute to social and economic development.
- Build trust among stakeholders.
- Ensure compliance with relevant laws and regulations.

III. RELATED WORK

"Blockchain Based Peasant Fund Distribution System" brings revolution in the process of distributing funds to farmers, students and entrepreneurs by collaborating advanced technology with administrative efficiency. In the core, the system prioritizes openness, access and security. Through a mobile application developed using React JS in Android Studios, farmers undergo a spontaneous registration process certified by telephone OTP. Here they provide significant land details, which enable streamlined fund distribution.

Concurrently, students and entrepreneurs submit their particulars, each tailored to their unique needs, fostering inclusivity. The central government spearheads fund distribution, leveraging blockchain technology to ensure tamper-proof transactions and immutable records. Government entities at various levels, from state governments to talukas and gram panchayats, manage the process via a web-based dashboard powered by RewactJS in Visual Studio. This platform facilitates scheme oversight, application approvals, and fund disbursement, fostering administrative coherence. New schemes are seamlessly integrated through web scraping, ensuring beneficiaries are abreast of the latest opportunities. Real-time notifications serve as a conduit of communication, keeping users informed throughout the application process. Continuous monitoring and iterative improvements bolster system functionality, while meticulous documentation and user training fortify user proficiency. Ultimately, the system's innovative approach and technological prowess catalyse socioeconomic empowerment, underlining its pivotal role in fostering equitable and efficient fund distribution in rural communities.



Testing: -

Unit testing is a basic aspect of software development where individual components, or devices, are tested in the separation of a system so that they work expected. In the context of the blockchain-based Farmers Fund's distribution system, the unit test plays an important role in verifying the purity and reliability of each function or module. Unit testing can be written to validate the tasks responsible for user approval, data recovery from the database or the handling of blockchain transaction. These tests are usually automatically performed under automatic and the development process, which helps identify errors or errors quickly and help ensure that code changes do not produce unexpected results. The unit test follows a black box or white box approach, where the tests are designed based on expected behavior and internal implementation details for the device. This allows developers to capture errors in the cases of logic, limit conditions and edge cases, before integrating into large systems, providing confidence in the accuracy of individual components. By including unit testing in development work flow, developers can improve the quality, maintenance and reliability of the code, and eventually contribute to the success of the project.

Integration Test: -

Integration test is a software testing technique where individual modules or components of a system are combined and tested as a group to ensure that they work together. When it comes to blockchain-based Farmer Fund

Distribution system, integration tests It plays an important role in verifying that different modules, such as front end, backend, database and blockchain components, integrated and properly interacted. During integration tests, the attention is in identifying and solving problems that arise due to interaction between different modules. For example, integration tests can confirm that the data is sent correctly between front and backnd, that the database transaction is handled properly and blockchain transactions are performed and recorded accurately. Integration tests can be done using different strategies, including from top to bottom, down and older attitude. This allows developers to detect integration defects, such as communication errors, data deviations or compatibility problems, before the system is distributed in production. By conducting a complete integration test, developers can ensure that blockchain-based peasant funds intend to have the fund distribution system, and work harmoniously with all components to provide the desired functionality and user experience. This system helps to reduce the risk associated with integration and increase confidence in the reliability and performance of the system.

Acceptance Test:-

The acceptance test is a crucial phase in the development life cycle of blockchain-based peasant fund distribution system, focusing on verifying whether the system meets specified business requirements and is ready for distribution. during

GUI Testing:-

GUI (Graphical User Interface) testing is a crucial aspect of the development process for the Blockchain-Based Farmer's Fund Distribution System, focusing on verifying the functionality, usability, and visual elements of the user interface. This testing ensures that the graphical components, such as buttons, menus, forms, and navigation, function correctly and provide a seamless user experience across different devices and screen sizes. During GUI testing, testers evaluate the interface's responsiveness, layout, alignment, color schemes, fonts, and overall aesthetics to ensure they meet design specifications and user expectations. Additionally, GUI testing involves validating user interactions, such as clicking buttons, entering data

into input fields, and navigating through different screens, to ensure they produce the expected outcomes. GUI testing may involve both manual and automated approaches, with testers using tools and frameworks to automate repetitive tasks and validate UI elements across various platforms and browsers. By conducting thorough GUI testing, developers can identify and address issues related to usability, accessibility, and visual consistency, ultimately ensuring a user-friendly and visually appealing interface for the Blockchain-Based Farmer's Fund Distribution System.

IV. METHODOLOGY

Employment employed in developing "blockchain" Based Farmer Fund Distribution System "symbolizes a systematic and repetition approach prepared to achieve its overall goals. Initially, extensive requirements are analyzed to delete the extent of the project and detect the user's needs. Later, a technology beet The web apps are a technology that is careful about a technology system, is a technology that is careful about a technology, and feedback loops and continuous integration, which ensures alignment of delivery with the user's expectations, and optimization, ongoing maintenance, maintenance and support activities ensure the life of the system.

1. Act js:-

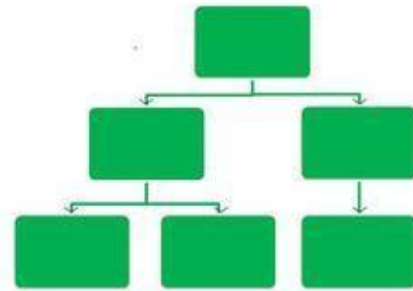
There is a JavaScript library for the manufacture of user interface (UI) on the React network. The reaction is an announcement, component -based library that allows developers to rebuild Ui components



4. One-way data binding:-

One -way databinding, the name itself says that it is an andirection flow. The data in React only flows in one direction, ie the data is transmitted from top to bottom, ie from original components to children's components.

Properties in the hair component (props) cannot return the data to the original component, but it can be communicated with the original components to change conditions according to the input.

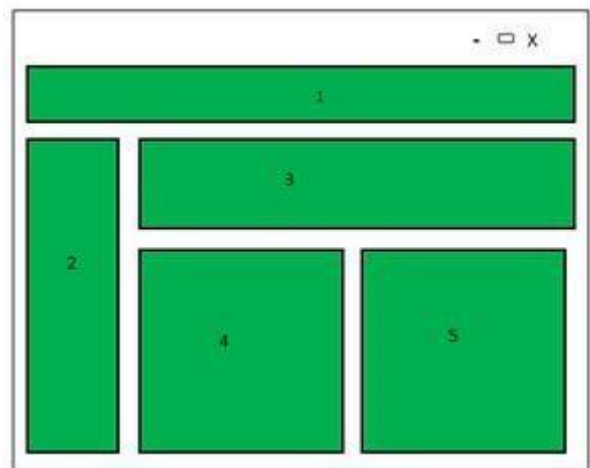


5. Display

As we discussed earlier, the response uses virtual dome and updates only the modified parts. So it causes the dome to run faster. Dom is run in memory so that we can make separate components that run judgment faster.

6. Constitution: -

Reacts divides the website into several components as it is component -based. Each component is part of the UI design that has its own logic and design as shown in the below image. So the component logic which is written in JavaScript makes it easy and run faster and can be reusable.



7. Single-Page Application (Spa)

Reactjs is recommended in creating SPA, allowing regular material updates without side loading. Its focus on recognized components makes it ideal for real-time applications.

Reactjs Life Circle:-

Each React component has its own life cycle, the life cycle of a component can be defined as a series of methods used in different stages of the existence of the component. The response automatically calls these methods at different points in the life cycle of a component. Understanding these stages helps to deal with the state, helps to attain side effects and adapt the components effectively.

1. Initialization:-

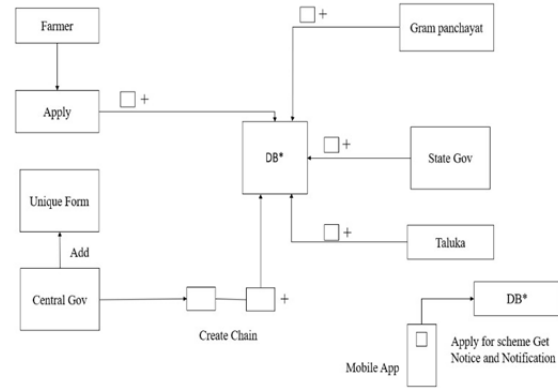
This is the phase where the component is made with a suggestion and standard position given to the component. This is done in a statutory construction.

2. Mounting steps:

- Constructor: The designer law initiates the component. This is where you establish a starting position and bind the event manager.
- RENDER (): This method goes back to the JSX representation of the component. This is called early rendering and subsequent updates.
- Componentdidmount (): After the component is inserted, this method is invited. Use it for side effects such as bringing data or setting hours.

3. Update phase:-

- Componentdidupdate (PrevsPs, Prevstate): The component is said to be updated due to new props or condition changes. Here handles side effects.
- Compomponentupate (NextProps, NextState): It determines whether the component should be rebuilt. Adapt performance by customizing this method.
- RENDER (): Again, the Render () method reflects changes in condition or props during updates.



5. Anamunting phase:- Componentwillunmount (): The component was invited just before removed from judgment. Pure resources (Eg event listener, timer)

V. SYSTEM DESIGN

Architecture Diagram:- integration of blockchain technology. The primary objective is to combat corruption and inefficiencies that currently plague the fund allocation system. The paper begins by acknowledging the imperative need for a secure and authentic fund allocation and tracking system. By leveraging blockchain technology, the authors aspire to create a system that not only addresses these challenges but also ensures transparency and accountability in the allocation of funds within the agricultural sector. The emphasis is on mitigating corruption, a critical issue that hinders the effective distribution of subsidies and funds. A thorough examination of existing research and related work in the field is presented, shedding light on the growing interest in utilizing blockchain technology within the government sector to enhance transparency and eliminate corruption. The survey of relevant papers provides insights into the potential of blockchain in transforming the current fund allocation landscape. The proposed system is implemented using the Ethereum blockchain and the Truffle framework.

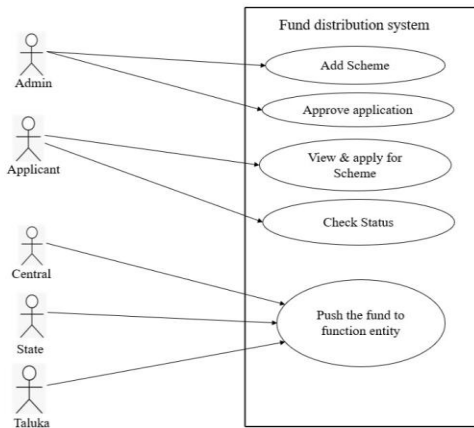
VI. UML DIAGRAM

cryptocurrency transfers specifically designed for agricultural

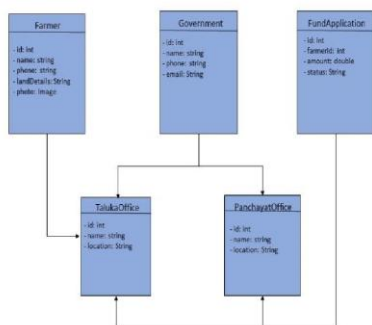
1.Use Case diagram:-

fund allocation. By incorporating blockchain, the authors aim to streamline the process and enable direct transactions between beneficiaries and donors, thereby ensuring transparency and maintaining an immutable ledger. The paper concludes by highlighting the substantial improvements that blockchain technology can bring to the agricultural fund allocation process. It asserts that blockchain has the potential to eliminate corruption, enhance security, and create a transparent and efficient system. The acknowledgment of the technology's potential impact on the overall growth and economy of a country underscores the significance of integrating blockchain in addressing critical challenges within the agricultural sector. In essence, the paper provides a valuable contribution to the discourse on leveraging blockchain for improving fund allocation in the agricultural

the implementation of a blockchain-based system to track and allocate funds within the agricultural sector in India. Recognizing the persistent challenges faced by the government in efficiently delivering agricultural subsidies, the authors aim to establish a focusing on the intersection of agricultural crowdfunding and blockchain technology to tackle the pressing financial challenges faced by farmers in India. The paper sheds light on the grim reality of farmer suicides, attributing these tragedies to issues such as overwhelming debt, challenges in loan repayment, and the prevalence of crowdfunding scams. Recognizing the urgency of addressing these issues, the authors propose a blockchain-based solution designed to streamline and revolutionize the financial landscape for farmers. The core objective of this proposed solution is to eliminate intermediaries, fostering a direct and transparent The relationship between consumers and farmers. By taking advantage of the underlying properties of blockchain technology, including openness and security, the system aims to set up a colleague-to-cum costume network. This network provides comfortable donation facilities from consumers to farmers, and ensures that financial assistance reaches their intended recipients without unnecessary intermediaries. In shades of paper blockchain technology, a variety of blockchain discusses and emphasizes the benefits of using private blockchain for Agriculture Crowdfunding application. With the help of private blockchain, the author wants to maximize the benefits of openness and security by sewing the system for specific requirements and requirements for agricultural references. The author expands his research method and implementation process, and uses Hyperner Fabric Framework to develop a blockchane network. The Hyperner - substance known for its suitability in corporate settings has been chosen as the basis for the construction of a strong and effective blockchain infrastructure in line with the unique requirements for agricultural crowdfunding. The client interface is designed to be important, browser -based to ensure user access and engagement. This ensures that funds can interact with both contributors and farmers contribute to its overall purpose and efficiency. The thesis is carefully emphasized for the functionalities given for these two major players in the system, and shows a comprehensive approach to solving financial challenges in the agricultural sector. Finally, paper of



2. Class Diagram:-



VII. LITERATURE REVIEW

Megha Rani Retal [5] This paper presents a comprehensive exploration in their paper, focusing on

Naga Venkat Mohit Desabathina et al. India presents a promising and innovative solution to the economic struggles that farmers face in India. Of imperceptible

Sahil Siddharth Jambhulkar and Vishakha Prashant Ratnaparkhi [2] The paper titled "Government Fund Distribution and Tracking System Using Blockchain Technology". the challenges faced by governments in efficiently managing funds allocated to various operations. The authors emphasize the prevalence of corruption in the current system, hindering the progress of states. The paper proposes a smart system that utilizes blockchain technology to track funds allocated to the government at each stage of the process, ensuring transparency and security. The authors begin by highlighting the extensive responsibilities of governments and the multitude of transactions involved in operations such as new projects, maintenance works, contracts, and employee payments. They identify low-level corruption as a major hurdle and propose a blockchain-based solution to address this issue. Blockchain technology is introduced as a decentralized and secure means of recording transactions. The setup phase of the proposed system involves generating public and secret parameters, including a random signing key pair and unique file identifiers. The authors use a bilinear map and hash functions to secure the authenticity of data blocks. In the audit phase, a third-party auditor (TPA) is introduced to verify data integrity. The TPA challenges the server to provide proofs of data storage correctness, and the server responds with encrypted information that is verified by the TPA. The paper discusses the security aspects of the proposed scheme, emphasizing the storage correctness and privacy-preserving properties. The security analysis includes evaluating the performance of the system in terms of efficiency, storage accuracy, and privacy preservation. The authors also provide mathematical modelling and algorithms for key aspects of their proposed system, such as AES with key generation, decryption, and TPA processes. The results analysis section presents the performance evaluation of the proposed system, considering file size, encryption and decryption times, uploading, and downloading times. The results indicate the efficiency and lightweight nature of the proposed scheme compared to an existing system that employs Attribute-Based Encryption (ABE). In conclusion, the paper underscores the potential of

blockchain technology to bring transparency and security to government fund distribution and tracking. The proposed system, with its emphasis on decentralized ledger maintenance and cryptographic security measures, is positioned as a means to mitigate corruption and enhance the integrity of government processes.

Yiran Lia and Zhenyu Wang [2] The paper examines the controversial issue of the impact of policy-oriented agricultural insurance on farmers' income. It begins by clarifying the theoretical operation mechanism of policy-oriented agricultural insurance and its influence on farmers' income. The study employs the fixed-effect model and panel quantile regression to empirically test the income effect of policy-based agricultural insurance on farmers, considering different income groups. The data used in the analysis span 31 provinces in China from 2007 to 2019. The research findings suggest that while policy-oriented agricultural insurance has an overall positive effect on increasing farmers' income, there is significant heterogeneity among farmers of different income groups. The influence of agricultural insurance becomes more pronounced as farmers' income increases. The paper emphasizes the importance of designing a differentiated subsidy system and maintaining a demand-oriented approach to prevent agricultural insurance from exacerbating income inequality in rural areas. The article highlights the historical context, noting that the issue of increasing farmers' income has been a central concern since the early 2000s. The Chinese government introduced policy-based agricultural insurance as part of broader efforts to address income stagnation in rural areas. The paper notes the growth of the agricultural insurance market in China and the subsequent increase in premium income, indicating the policy's positive momentum. Agricultural insurance in China covers various aspects, including crop insurance, animal farm insurance, and farm asset and machinery agricultural programs. Despite the growth in the agricultural insurance market, the paper identifies challenges such as financial subsidy shortages at the local level, single insurance types, discrepancies between insurance company surveys and compensation payments, low awareness of farmers' participation, and moral hazard issues. The study acknowledges the positive role of agricultural insurance in mitigating losses caused by

natural disasters and providing financial support for farmers. However, it criticizes the current policies for not covering essential costs such as land rent and labour, potentially leaving farmers inadequately compensated in the event of a significant natural disaster. The paper concludes by emphasizing the need for a nuanced approach to policy-based agricultural insurance, considering the heterogeneity among farmers. It underscores the importance of addressing the identified challenges, such as subsidy issues and coverage limitations, to ensure that agricultural insurance genuinely contributes to increasing farmers' income without widening income disparities. The literature review provides a comprehensive overview of previous research on the relationship between agricultural insurance and farmers' income, highlighting both domestic and international perspectives. It notes that existing literature lacks consensus on whether agricultural insurance genuinely contributes to increasing farmers' income and points out the gap in previous studies related to the heterogeneity of different income groups. The theoretical analysis delves into the operation mechanism of policy-based agricultural insurance, emphasizing its quasipublic good nature due to the combination of private and public goods attributes. The analysis underscores the role of governments in encouraging insurance institutions and farmers' participation through subsidies, aiming to maximize social utility.

Hang Xiong et al [4] This article, titled "Blockchain Technology for Agriculture: Applications and Rationale," explores the potential applications of blockchain in the agriculture sector. Published in *Frontiers in Blockchain*. The authors emphasize the increasing importance of data and information in agriculture for improving productivity and sustainability. They discuss how Information and Communication Technology (ICT) has enhanced data collection and decision-making in agriculture. The transition from ICT to blockchain is motivated by the need to address biases in data collection and usage. Blockchain, described as a ledger collectively managed by participants, is seen as a transformative technology with the potential to revolutionize data usage in agriculture

CONCLUSION

Finally, "Blockchain -based Farmer Fund Distribution System", especially in the agricultural sector, represents an important step in revolutionizing distribution processes for funds. By using the power in blockchain technology, mobile applications and web-based dashboards, fund distribution of system current lines, ensures transparency, efficiency and responsibility. Farmers, students and entrepreneurs benefit from a user -friendly interface that simplifies the application process, while government officials have access to real -time data and analyzes to make informed decisions. Use the system of blockchain technology ensures security and irreversibility of fund distribution registers, and reduces the risk of fraud or tampering. Smart contracts automated allocation of funds, reduce administrative overheads and ensure fair and timely payment of funds. In addition, integration of web -scraping tools spontaneous integration of new government schemes, and ensures that users have access to the latest opportunities and benefits. Overall, "Blockchain -based Farmer Fund Distribution System" represents a paradigm change of how funds are distributed, the recipients are strengthened and the integrity and efficiency of the fund distribution processes are increased. As technology develops, this system is ready to adapt and innovate into rural communities and beyond. Through a commitment to collaboration, innovation and skill, the project sets a new standard for transparent and fair fund distribution, which paves the way for sustainable development and prosperity.

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