ATOMIC PLATFORM FOR REGULATING CHARITY FUNDS USING BLOCKCHAIN TECHNOLOGY

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ABSTRACT

Legislators from all over the world are collecting taxes on the profit, but nobody knows where this vast amount of money is going. A significant majority of us must donate those funds in order to support a cause, receive gifts, or secure sponsorships. Everyone is simultaneously unsure of which association to trust and to whom to give their federal tax returns. The crowd funding entrance/local area/non-benefit association/peer-to-peer automatic aiding programme was introduced so that anyone could give/support money to people/startups that need/merit it in order to avoid these numerous uncertainties and questions. This CF application uses block chain innovation for safe financial transactions. Blockchain will be the only medium of exchange. Clients and employees from all around the world have gathered in this entryway to provide a hand and demonstrate humanity. It is an open source platform that is entirely transparent, trustworthy, and focused on the cause as well as how to make it as easy as possible for people to support it. Before funding, the government's income tax division can approve the funding and any appropriate tax exemptions for the charity, so the funding's transparency ensures its accuracy.

INDEX TERMS: Black Chain, Information Security, Crowd Funding

I. INTRODUCTION

Transparency is lacking in the charity and donation industry's present systems. Due to improper record-keeping practises and the involvement of some dishonest individuals within the organisation, people have lost faithin this social cause when it comes to donations given to various organizations. The donor is ignorant of how effectively their contributions are being used. The donor loses faith in charities for another reason, which is corruption. Through the use of smart contract-based incentives, which help to confirm their impact is verified without the interaction of third parties, the proposed system assists social organisations in managing various projects for social causes transparently without the involvement of third parties while also being open to everyone. Donors, organizations, and other participating suppliers may easily track their transactions thanks to this, which helps them reclaim their faith in such social groups. The system will contribute to the development of trust among donors, beneficiaries, and other parties involved in the charitable process. It also guarantees that the donation will reach its designated recipient while enhancing overall administration. Via this mechanism, individuals can ask the Income Tax Department for information regarding an organization's tax exemption status. They will outline the tax exemption information for the organisation. By giving the donor the certificate, the proposed method will approve our funds.

LITERATURE SURVEY

Block chain-based smart contracts were established by Aashutosh Singh et al. [7] to govern the transfer of tokens or virtual currency between the parties directly involved in the transaction, obviating the requirement for a reliable third party. Every transaction may be tracked using the blockchain. A high degree of transparency and social responsibility can alleviate donors' concerns and inspire them to give while also enhancing the positive perception of generous giving.

B. Kamala et al. [3] proposed a system in which the system would only aid in contributing foods, clothing, and money to the orphanages and would also feature in adopting the children from the orphanages without much of a wander. The system is more dependable and takes less time thanks to the application incorporated in this.

According to Hanyang Wu et al. [2], blockchain technology has thus been introduced to address problems with cross-regional and cross-domain charitable giving. Here, blockchain technology is utilised to safeguard data security, establish access controls, guarantee donation transparency, and track donation behaviour. The charity giving system is paying increasing attention to blockchain in terms of data exchange, information management between contributors and recipients, and contract administration between nonprofits and businesses.

According to Maryani et al. [10], the use of technology in crowdfunding platforms enhances donors' privacy when making contributions to campaigns. This is a result of the transaction being transparent. Records of every transaction that may be accessed via the platform are accessible to all users. Besides, Because the contract is automatically applied if the conditions are satisfied, its application also boosts donors' faith in the campaign.

citing Nikhil Yadav et al. Eventually, it is determined that blockchain-based crowdfunding is a relatively new idea to the ICT community. The frontend of the decentralised web app is designed to allow users to start new projects, contribute to existing ones, start new requests, approve requests, and complete requests.

The method proposed by N. Sai Sirisha et al [8] will track donations and inform the donor when their money has successfully reached the beneficiary. Smart contracts are used by charity chains to handle and track donations. The computational efficiency and scalability of the byzantine consensus algorithm are utilised. Pratyush Agarwal et.al [9] introduced a system for using cryptocurrency for charity work to make it more transparent through a decentralised system. Many people have become more altruistic as a result of urbanization's increased care for others. But, there are also some who wish to ultimately profit from the process. Both of these needs will be met by this method. It will increase transparency throughout the entire process. This will assist in removing middlemen between donations and those who perform acts of charity.

Overview of Block chains

Blockchain explained: Blockchain is a distributed, unchangeable database that makes it easier to track assets and record transactions in a corporate network. An asset may be physical (such as a home, car, money, or land) or intangible (intellectual property, patents, copyrights, branding). In a blockchain network, practically anything of value may be recorded and traded, lowering risk and increasing efficiency for all parties.

Why blockchain is crucial

Part two Information is essential to business. It is best if it is received quickly and is accurate. Blockchain is the best technology for delivering that information because it offers real-time, shareable, and entirely transparent data that is kept on an immutable ledger and accessible exclusively to members of a permissioned network. Among other things, a blockchain network can track orders, payments, accounts, and production. Additionally, because everyone has access to the same version of the truth, you can see every aspect of a transaction from beginning to end, increasing your confidence and opening up new prospects.

Important Block chain Distributed Ledger Technology components

The distributed ledger and its immutable record of transactions are available to all network users. With this joint ledger,

Transactions are only only recorded once, which eliminates the repetitive work that plagues conventional corporate networks.

Unchangeable records

Once a transaction has been added to the shared ledger, no participant is permitted to alter or interfere with it. A fresh transaction must be added to undo an error in a transaction record before both transactions are displayed.

Sensible contracts

A set of instructions known as a smart contract is saved on the blockchain and automatically carried out to speed up transactions. A smart contract can specify parameters for corporate bond transfers, stipulate how much must be paid for travel insurance, and much more.

How block chains function

Each transaction is recorded as a "block" of data as it happens.

These transactions demonstrate the transfer of an asset, which may be tangible (a product) or intangible (intellectual). Who, what, when, where, how much, and even the condition—such as the temperature of a food shipment—can all be recorded in the data block.

Every block is interconnected with those that came before and after it.

As an asset is moved from one location to another or ownership changes, these blocks create a chain of data. The blocks link securely together to prevent any blocks from being altered or a block from being introduced between two existing blocks, and the blocks certify the precise timing and order of transactions.

Transactions are blocked together in an irreversible chain: a blockchain Every new block reinforces the prior block's verification, and by extension, the blockchain as a whole. This gives the blockchain its crucial strength of immutability and makes it tamper-evident. By doing this, you and other network users may create a trusted ledger of transactions and eliminate the chance of tampering by malevolent actors.

The advantages of blockchain

What should change: Operations frequently squander time and resources on third-party validations and duplicate record keeping. Systems for preserving records may be susceptible to fraud and online threats. Data verification may be slowed by a lack of openness. And the number of transactions has multiplied since the introduction of IoT. We need a better solution because all of this slows down company and depletes the bottom line. here comes blockchain. higher faith You may be confident that as a member of a blockchain-based network with restricted access, you will always receive up-to-date information and that only the network members to whom you have specifically authorised access will have access to your private blockchain records.

Increased safety

All network participants must agree that the data is accurate, and since all confirmed transactions are permanently stored, they cannot be changed. A transaction cannot be deleted by anyone, not even a system administrator.

Greater efficiency

A smart contract, which is a distributed ledger shared by network participants, can be posted on the block chain and executed automatically.

CURRENT SYSTEM

Transparency is lacking in the charity and donation industry's present systems. Due to improper record-keeping practises and the involvement of some dishonest individuals within the organisation, people have lost faith in this social cause when it comes to donations given to various organisations. The donor is ignorant of how effectively their contributions are being used. The donor loses faith in charities for another reason, which is corruption.

It concerns how the history of each cryptocurrency in the Monero block chain may be found. In the case of block chain systems like the Monero Block chain, people contest the necessity of tracing the origin. The author finds a solution to the issue of transactional traceability between two entities. Transparency between the parties and the end user is achieved by tracking any transaction. When a real-world transaction like buying a goods takes place, the client should be able to confirm whether the thing is genuine or not. If it is able to track down and confirm the product's prior transactions soon after it is manufactured, this is feasible. This can therefore be applied to real-world applications where it is required to track previous transactions, such as metal purchase management, food delivery, product quality check, and others. The model's designers assert that the product's transactions on the Monero block chain can be tracked for authenticity and verification purposes. The author provides a quick overview of Bit coin as a cryptocurrency that is It describes a system that categorises each transaction into a collection of inputs and outputs using a unique ID and a hash value. Each transaction's hash value can only be used as the input for the whole block chain once. The author also briefly discusses the benefits of merging Ethereum and block chain technology, which involves the idea of smart contracts, the foundation of contemporary cryptocurrency development. Smart Contracts are a set of rules that the parties to a transaction must abide by in order to avoid the need for a reliable third party and to foster confidence between them. In article [7], the author describes a system in which the transfer of money from one person to another is not overseen by a reliable third party. To handle any kind of electronic payment, Internet commerce relies on a financial institution that acts as a trusted third party. This is effective enough for the majority of transactions, but because entirely reversible transactions are impossible because they can result in conflicts between financial institutions, it still lacks the trust of the parties involved. The Blockchain framework stores transaction details in units known as "blocks," which are serially connected to one another using the hashing technique. Each peer or node in the network has a copy of the blockchain to check its authenticity, i.e., to see if any information recorded there matches that stored on other nodes, and if not, to reset the data to that found on the majority of nodes.

IMPLICATIONS OF THE CURRENT SYSTEM

• lack of openness.

• Authentication and verification are used in online transactions between two entities.

PROPOSED SYSTEM

The suggested system runs on the blockchain and is decentralised. As a decentralised system, it is not controlled by a central authority or organisation like a database. With the blockchain network, everything is saved as a transaction. These transactions are carried out or operate on the basis of a smart contract that is digitally implemented and is analogous to a real-world contract. The system consists of users who are classified as the donor/beneficiary, CHARITYORG, and the Government entity and who play a significant role. These users will be account holders in the blockchain network, and each of them will be able to access, execute, and sign transactions using a unique identification number.

The system consists of users who are classified as the donor/beneficiary, CHARITYORG, and the Government entity and who play a significant role. These users will be account holders on the blockchain network, and their 160-bit account addresses will allow for unique identification of each of them. Their accounts are accessible, 256-bit private key to execute and sign transactions. Hence, the various user types are as follows:

A. Charitable Organizations: These are the groups that support social causes. They are able to raise their requirements through the system dashboard in accordance with a defined structure.

B. Regulatory Commission (Government Body-ITD): This body gives its approval to the demands put forth by the nonprofit

organisations. The requirements will only become displayed on the donor's dashboard, where they can donate, after this approval.

C. Donors: The donor has access to the specifications that the government and the CHARITYORGs agreed upon. People can contribute to various needs in accordance with their capacity and choices. The recorded transactions make up the system architecture.Smart Contract: In a block chain network, smart contracts are essentially a collection of rules that are approved by numerous parties. It facilitates transaction execution in a transparent manner, avoiding the need for a third party and resulting in system decentralisation. These regulations are carried out digitally as code. In the blockchain network, they can only be deployed once and cannot be changed.

BENEFITS OF THE PROPOSED SYSTEM

- Take the appropriate actions for their respective roles as a donor, non-governmental organisation, or governmental body.
- The username, password, and private key will all be unique for each user.
- track transactions and total contributions of donors; donate; enabling government entities to approve the requirements;
- They'll be able to keep tabs on the transactions.

Fig 1:
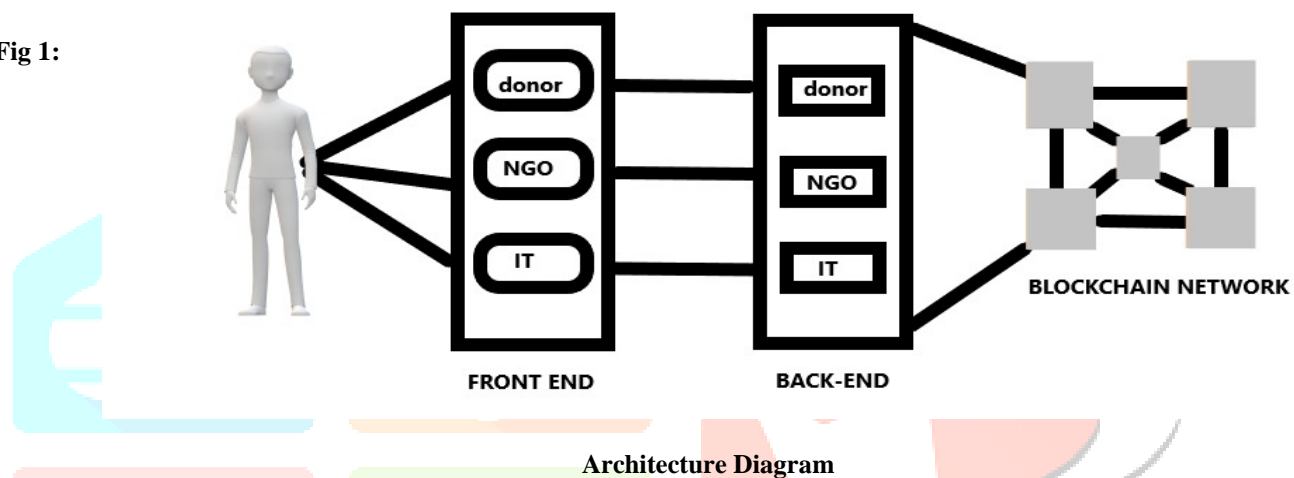
Architecture Diagram

ALGORITHM:
Procedure BCBCF algorithm

1.   set_Requirement():
2.   approve_Requirement()
3.   donateTokens()
4.   buyTokens()
5.   report_CHARITYORG()
6.   transactionHash()
7.   updateBloclchain()

End procedure

The suggested method is as follows: In this system, the beneficiaries will define the conditions, and the regulatory commission will approve them. The donor will see the requirements on this platform once it has been accepted. The trust that the donor wants to donate to is up to them to decide. The trust will inform the donor if the transaction is successful by producing the report. Every time a block transaction occurs, a hash value is generated and saved in the preceding block, making it harder to tamper with the platform.

MODULES DESCRIPTION

BENEFICIARY MODULE AND ITS OPERATION

The beneficiary registers and logs in, providing basic information and confirming their identification; release of information, including details on the Covid-19 epidemic's current state, needs, and available help options; Information maintenance refers to maintaining and updating user information, such as contact details, personal accounts, etc. The update of the change and status is the primary component of maintenance. The status of charity donors' setup, permission, use, and browsing is included in the progress enquiry; The input of contributed funds, the feedback on the status of relief efforts, and the project's conclusion are all accountable for project completion; For the purposes of a systematic assessment, information feedback comprises alleviation progress, effectiveness, and evaluation.

DONORS MODULE AND ITS OPERATION

The donor registers and logs on, entering basic data and confirming their identity. Obtaining information Users of the charity donation system log in to understand the most recent status of the pandemic, the needs of the recipients, and to keep track of modifications and specifications. Donation of funds: A virtual token is used to carry out the donation on the blockchain. Contributors select charitable causes and top off their accounts. The regulatory commission must first validate and approve the donation in regards to the tax exemption limit, the fund collection limit, and the duration of the registration.

FUND REGULATORY COMMISION (ITD)

At some point, people wondered whether they should donate to charities and contribute to society. Making a difference by giving to a cause you really support is admirable. The government offers its entire support to charitable services in light of this noble deed. You are entitled to a tax deduction for gifts you make to charitable organisations under Section 80G of the Indian Income Tax Act.

The Authority will confirm the parties' names and PANs. Amount of the donation is used to determine how much can be written off as a tax deduction. The donors are informed of the same.

BLOCKCHAIN SECURITY

A sophisticated database technique called block chain technology enables transparent information sharing inside a business network. Data is kept in blocks that are connected together in a chain and stored in a block chain database. Public digital ledger that is utilised to log transactions for a number of charitable organisations so that the record cannot be changed retrospectively without affecting all succeeding blocks and obtaining network consensus. This promotes and safeguards charity funding openness.

IMPLEMENTATION OF CHARITY DONATION SERVICE SYSTEM

The system's software design is divided into three layers based on the integration of web and blockchain: a front-end control layer, a back-end control layer, and a data service layer. Via the data service application platform, various interfaces are displayed to various users in the front-end control layer. Using the front-end controller, users communicate business requests to the back-end control layer. The web service controller and the blockchain business controller both respond to user requests and call services in the backend control layer. In addition to accepting blockchain services, this particular service module can also be fulfilled by web services, but only if the conditions of the service are met. By using crypto currencies instead of traditional money for fund management, transaction tampering can be avoided. The system issues tokens and completes the user's rights of token exchange, transfer, and recovery by making a call to

the appropriate smart contract on the blockchain while the donation project is being set up. The blockchain's Merkle tree contains the transaction data, and the node stores the transaction data's hash value. The hash value of each transaction is distinct since the hash value algorithm is irreversible and conflict-free. The smart contract first queries the hash value associated with each transaction in the local database before querying the relevant transaction records and transaction data on the blockchain platform. This two-stage query addresses the issues of authenticity and transparency while guaranteeing the accuracy of the data.

Latency per number of block increase in chain (Average of 10 experiments)

Number of Blocks	Latency(ms)
50	156
100	365
150	345
200	543
250	546
300	645
350	567
400	587
450	617
500	789

Table 1: In milliseconds, latency per transaction blocks

The event latency that occurs is a gift, as seen in Table 1. The block number, transaction hash value, index value, donor's address, digital signature record, block hash value, and prior block hash value are all recorded when a donation event happens. The block hash value and the hash value of the previous block are both crucial components that guarantee the immutability of the ledger in the block chain.
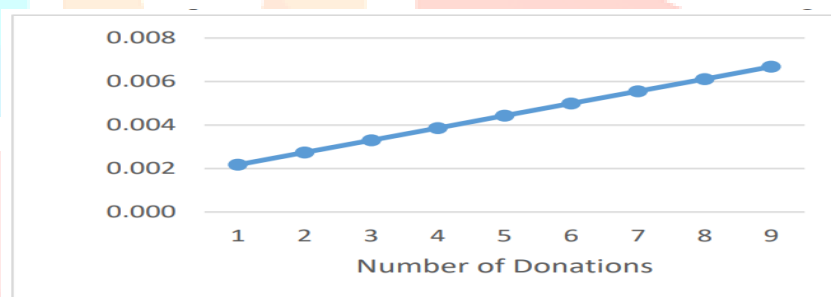

Fig 2: Latency on no of donations at a time..

The graph fluctuates according to the quantity of simultaneous transactions that involve donations. The amount of time rose linearly with the number of donated addresses. The donor can make simultaneous donations to numerous institutions because the system is set up to accept multiple donations via blockchain. when a donation is given on an individual basis.

CONCLUSION AND FUTURE ENHANCEMENT

The importance of old age and orphanages to society cannot be overstated. Another unacceptable hindrance to the nation's development is scarcity. So, a significant portion of scarcity will be reduced if all orphanages have good infrastructure and are supplied with their basic necessities. So, a significant portion of scarcity will be reduced if all orphanages have good infrastructure and are supplied with their basic necessities. The Decentralized Donation Tracking System, which is built on blockchain technology and smart contracts, keeps track of transactions involving donors and collects data on how donations are used. Without having to rely on a third party, the implementation of smart contracts utilising blockchain enables direct control of the transfer of funds between the parties engaged in the transaction. The system accepts and permits donations. Because each transaction is distinct, the blockchain makes it simple to follow them.

The primary purpose of blockchain technology is to track all transactions, both financial and non-financial. Since the data is disseminated across all nodes, or in a decentralised way, the full record is unquestionably transparent. The proposed system eliminates the need to rely on a reliable third party to handle charitable donations; it can be adopted by different financial institutions for any transaction involving two parties, and the government can create its own digital currency to handle all transactions. By eliminating corruption and providing complete transparency, the proposed system will ultimately increase public trust.

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