Research Paper on Crowdfunding System Based on Blockchain

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Abstract- At first, blockchain was solely used to support cryptocurrencies, but as time goes on, further and further sectors are espousing this new technology. piecemeal from bitcoin numerous other crypto currencies began to crop. Defy systems helps to boost the power of websites with smart contracts and blockchain network. Blockchain is anticipated to be used by the maturity of technologies in the future as an effective means of conducting online deals. Crowdfunding platforms are one of the diligences to which blockchain technology may be applied. Crowdfunding is a new and innovative system for funding colorful kinds of gambles, wherein individual authors of the gambles can request for finances. The gambles may be working for profit motive, artistic or social. The finances are generally given to help people. It includes the use of internet social media platforms to connect investors with entrepreneurs in order to raise capital for colorful kinds of gambles in return for compensation. Internet and social media came new platforms that surfaced. The internet and social media are essential for nonprofit businesses and entrepreneurs to raise plutocrat. To further work the superiority of combining blockchain and crowdsourcing, in this paper, we propose an innovative mongrel blockchain crowdsourcing platform, named CrypFunds. Whether it be donations to a political cause or to an association, crypto is generally treated as property in the United States, and therefore numerous. Donations made in cryptocurrencies can be subtracted by levies as charitable benefactions. Donations in crypto can allow associations to take advantage of a new set of implicit benefactors who would prefer to contribute via blockchain rather than some of the more traditional styles that might bear them to dodge capital earnings levies.

Keywords: Blockchain, Solidity, Web3, Web3.eth, Goerli testnet, Infura, Next.js, React.js, Crowdfunding, donation, Web development

I. INTRODUCTION

Crowdfunding is one of the most popular ways to raise funds for any project, cause or for helping any individual in need. With the onset of Covid we have seen a rise in Crowdfunding activities across the globe which includes small campaigns to help people in need.

The major problems with the Current Crowdfunding Platforms that we wanted to   solve were:

-Security: As the funds become larger, they need to be heavily secure, although stringent measures such as symmetric encryption are in place to make e-payment safe and secure, it is still vulnerable to hacking. Blockchain which has never been compromised yet can provide that level of security.

-Transparency and Anti-Fraud: We have seen, and continue to see a lot of crowdfunding scams happening around. There is no way to see where the funds are being used. We wanted to make the entire flow of funds transparent at every stage, so that there is no possibility of the money being misused.

-Global Contribution: With some of the platforms being country specific, it becomes hard for people from other countries to contribute to various campaigns. Using blockchain anyone in the world can contribute to the campaign. Transactions are convenient.

Initially, blockchain is only used as a foundation of cryptocurrency, but today, we can see the rise of this new emerging technology are being implemented in many industries. In the future, most technologies around the world are expected to use blockchain as an efficient way to make online transactions. One of the areas that blockchain technologies can be applied is crowdfunding platforms.

The most common problem with current crowdfunding scene in around the world including is that the campaigns are not regulated and some of the crowd-funding campaign turned out to be fraud. Besides, the completion of some projects also was significantly delayed. This project aims to solve these problems by applying Ethereum smart contracts to the crowdfunding site to that the contracts will be fully automatically executed, thus preventing frauds and ensuring that the projects can be delivered within duration given

Goals or Objectives:

-To combine the advantages of blockchain, we formalize a decentralized funding framework named CrypFunds
-To design a Payment gateway that supports multiple currencies.
-Creating Progress meter to easily track campaign progress.
-Providing Secure mobile options to best reach your audience.

II. LITERATURE SURVEY

Maryani, A. S. Perbangsa and T. Udiono, "The Model of Web-based Crowdfunding Platform," 2020 International Conference on Information Management and Technology (ICIMTech), 2020. Crowdfunding allows people to invest with a joint scheme on a project or business that is not included in the stock exchange list. With a joint scheme, investors can buy a portion of project or business ownership with a relatively small nominal purchase. However, investors need tools to facilitate the search and purchase of projects or businesses that match their character. This research is intended to design a Web-based Crowdfunding Platform model that suits the needs of investors. This study uses the questionnaire method to obtain investor information requirements data. As for model designing, this study employed the Object-Oriented Analysis and Design (OOAD) method, and used notation from the Unified Modeling Language (UML) standard. The result of this study is a Web based Crowdfunding Platform model that facilitates investors to choose and arrange investment portfolios that are appropriate to their preferences

V. Patil, V. Gupta and R. Sarode, "Blockchain-Based Crowdfunding Application," 2021 Fifth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), 2021. Initially, blockchain is only used as a foundation of cryptocurrency, but today, we can see the rise of this new emerging technology are being implemented in many industries. In the future, most technologies around the world are expected to use blockchain as an efficient way to make online transactions. One of the areas that blockchain technologies can be applied is crowdfunding platforms. The most common problem with current crowdfunding scene in around the world including is that the campaigns are not regulated and some of the crowd-funding campaign turned out to be fraud. Besides, the completion of some projects also was significantly delayed. This project aims to solve these problems by applying Ethereum smart contracts to the crowdfunding site to that the contracts will be fully automatically executed, thus preventing frauds and ensuring that the projects can be delivered within duration given.

III. BLOCK CHAIN
Blockchain is a decentralized, distributed ledger technology that enables secure and transparent record-keeping of transactions and data. The technology was first introduced in 2008 as the underlying technology behind the cryptocurrency, Bitcoin, but has since been applied to a wide range of industries and use cases beyond finance.

At its core, a blockchain is a chain of blocks, where each block contains a set of transactions or data that are verified by a network of nodes or participants in the blockchain network. Once verified, the block is added to the existing chain, creating a permanent, immutable record of all transactions on the network.

One of the key features of blockchain is its decentralization, which means that there is no single point of control or authority in the network. Instead, all participants in the network have a copy of the blockchain and work together to maintain and validate transactions on the network.

Another important aspect of blockchain is its security. The decentralized nature of blockchain makes it resistant to attacks and tampering, as changing one block in the chain would require changing all subsequent blocks, which is computationally infeasible.

Blockchain has many potential use cases beyond cryptocurrencies, including supply chain management, voting systems, identity verification, and more. As the technology continues to evolve and become more widely adopted, it has the potential to transform the way we store, share, and secure information and assets.
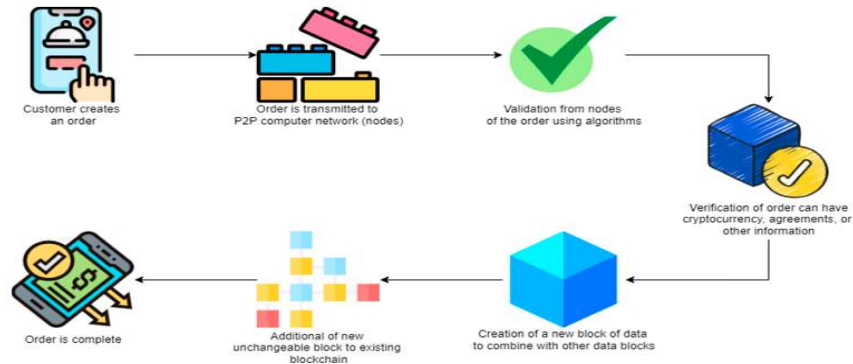

Fig 3.1 Blockchain Model

3.1 History of Blockchain

In 1982, David Chaum, a cryptographer, published a dissertation titled "Computer Systems Created, Managed, and Trusted by Mutually Suspicious Organizations," which included a proposal for a blockchain-like protocol. Stuart Haber and W. Scott Stornetta provided a description of additional work on a chain of blocks that was cryptographically secured in 1991. They sought to put in place a mechanism that would prevent tampering with document timestamps. Merkle trees were included into the design in 1992 by Haber, Stornetta, and David Bayer, which increased its effectiveness by enabling several document certificates to be gathered into a single block. Since 1995, The New York Times has issued their document certificate hashes under the business Surety.
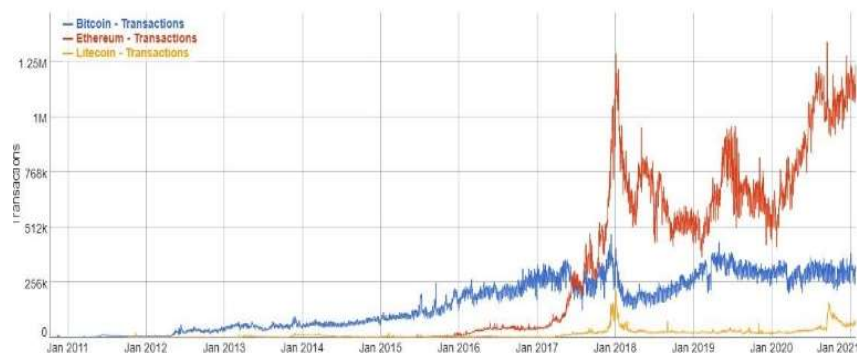

Fig 3.2 Bitcoin, Ethereum and Litecoin transactions per day (January 2011 – January 2021)

3.2 Structure and Design of Blockchain

A distributed timestamping server and a peer-to-peer network are used to manage a blockchain database independently. These are verified by widespread cooperation propelled by group self-interest. A robust process is made possible by such a design where participants' uncertainty about data security is minimal. A digital asset loses the property of unlimited replication when a blockchain is used. By proving that each unit of value was transmitted just once, it puts a stop to the persistent issue of double-spending. A mechanism for value exchange has been used to describe a blockchain. Because it produces a record that compelled offer and acceptance when it was correctly configured to specify the trade agreement, a blockchain can preserve title rights.
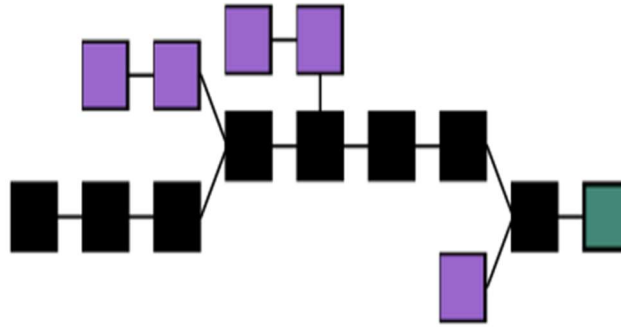
Fig 3.3 Blockchain formation.
The main chain (black) consists of the longest series of blocks from the genesis block (green) to the current block. Orphan blocks (purple) exist outside of the main chain.

3.3 Key Elements of Blockchain

3.3.1 Distributed ledger technology

The distributed ledger and its immutable record of transactions are available to all network users. Transactions are only recorded once with this shared ledger, preventing the duplication of effort present in conventional corporate networks.

3.3.2 Immutable 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.

3.3.3 Smart 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.

3.4 Working of Blockchain

3.4.1 As each transaction occurs, it is recorded as a "block" of data

Those transactions show the movement of an asset that can be tangible (a product) or intangible (intellectual). The data block can record the information of your choice: who, what, when, where, how much and even the condition — such as the temperature of a food shipment.

3.4.2 Each block is connected to the ones before and after it

These blocks form a chain of data as an asset moves from place to place or ownership changes hands. The blocks confirm the exact time and sequence of transactions, and the blocks link securely together to prevent any block from being altered or a block being inserted between two existing blocks.

3.4.3 Transactions are blocked together in an irreversible chain: a blockchain

Each additional block strengthens the verification of the previous block and hence the entire blockchain. This renders the blockchain tamper-evident, delivering the key strength of immutability. This removes the possibility of tampering by a malicious actor — and builds a ledger of transaction you and other network members can trust.

IV. PROPOSED WORK

There are two modules, Admin and Donators\Fundraisers. Investors needs to fill in details like description of campaign, target amount and minimum contribution. This detail are registered on the network along with the campaign. Only Admin can withdraw funds to the desired wallet when the finds requirements are met and consciences are passed. The flow shifts smoothly between the investors\donators which has been shown in fig 3.1
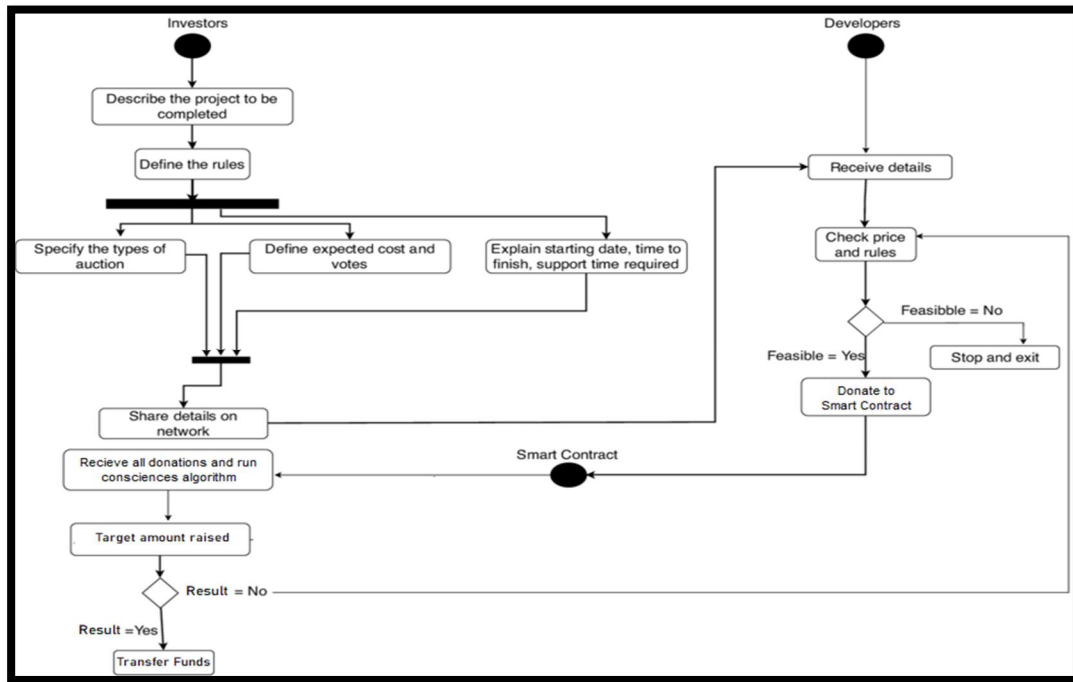

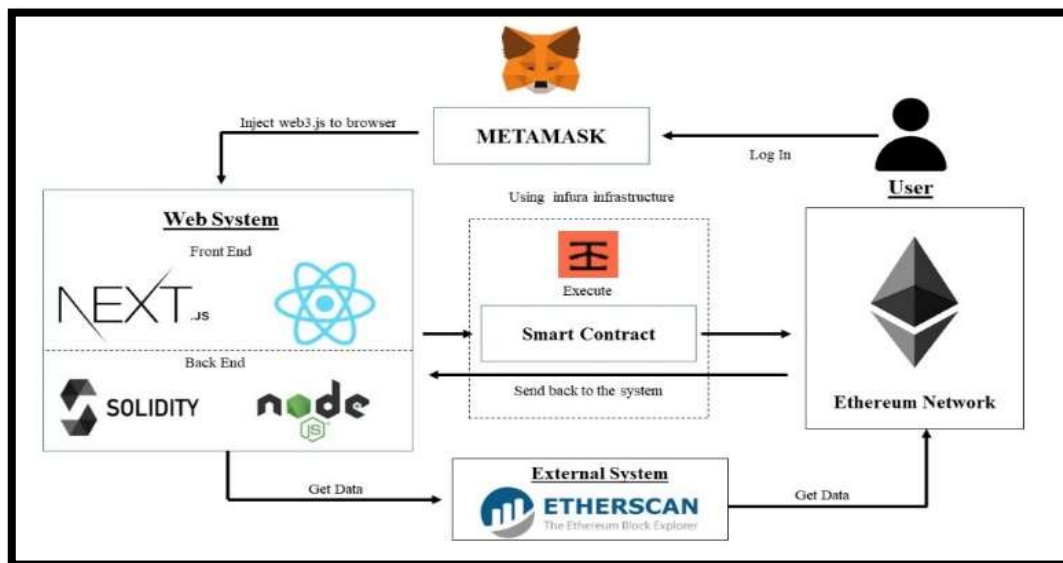Fig. 4.1 Flowchart for CrypFunds

V. FUNCTIONAL MODULES

Fig. 4.2 System Architecture of CrypFunds

There are multiple functional modules that play their own in the system parts:

1) Campaign Creators: These are the users who have created a Campaign.

2) Contributors & Approvers: Contributors are the users who contribute and fund the campaigns. Approvers are Contributors who have contributed more than the Minimum Contribution, and they can approve the withdrawal requests.

3) Creating a Campaign: Just like Crowdfunding in the real world as well as on other crowdfunding platforms, anyone can create a campaign in a few minutes. The campaign information will be managed by the Ethereum-based smart contract and thus cannot be tampered with.

4) Contributing to a Campaign: Once a campaign has been created, users can share the campaign and anybody can contribute to the campaign. The funds will go to the address of the campaign and not to the creator of the campaign, thus making the process more efficient and anti-fraudulent.

5) Withdrawal of Funds: The Creator of a Campaign can propose how to use the funds in the form of a Withdrawal Request. Anybody who contributes more than a particular amount is called an approver, and will be able to approve or deny the request. Funds can't be withdrawn without the approval of 50% approvers

VI. APPLICATION

1) Decentralization: Since block-chain is decentralized it doesn't rely on any other platforms to create funds. for starters, no longer to be obliged to any rules and any project can get visibility and funded if the investors think to invest, eliminates fees which makes crowdfunding less expensive for the creators.
2) Access Equity: To provide investors equity or ownership block-chain relies on asset tokenization. For example, a person who plans to create multiple new products with the incoming funds and grant small ownerships stake in the company. This could potentially open whole new world of opportunity.
3) Universal Opportunity: Any project using a block-chain-based crowdfunding model can get funded. Any person with an internet connection can contribute projects.
4) Flexible Options: Using block-chain as asset tokenization grants creators and entrepreneurs more liberties. Usually asset tokens have their own currency to enable organizations to hire professionals and advertisers.

5) Peer-to-Peer: The cryptocurrencies are exchangeable on a peer to peer network. This usually help the people for their investment which even generates more interest in the entire process.
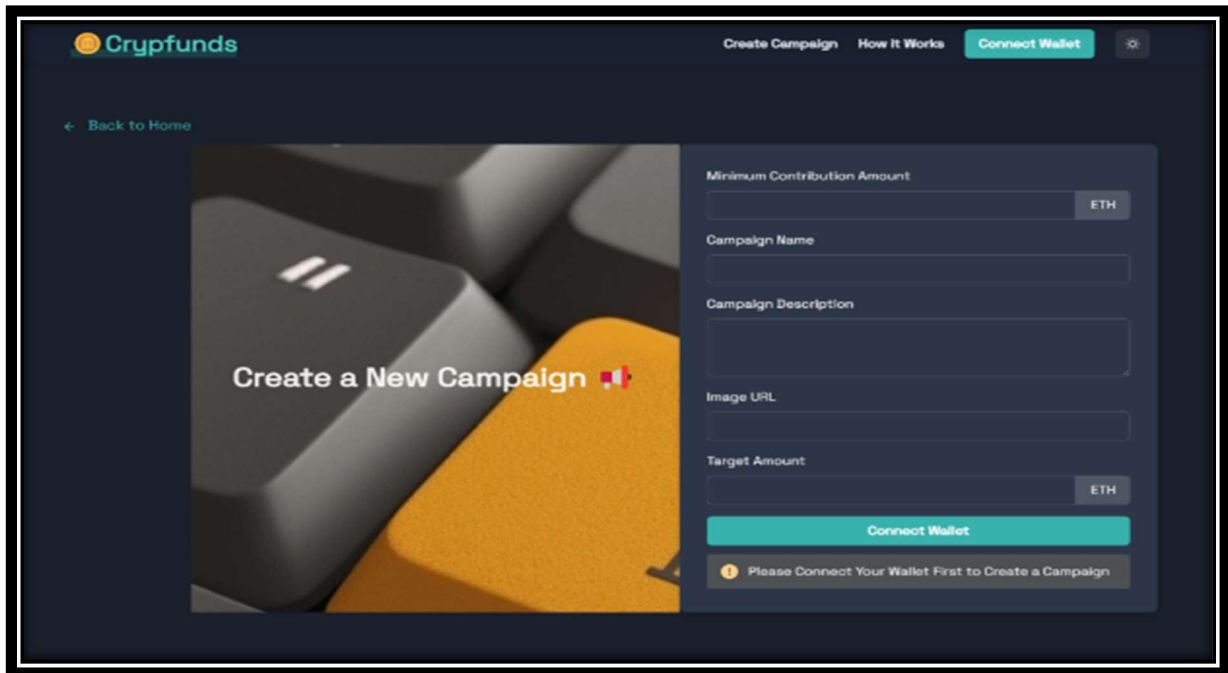
VII. RESULT

Fig.7.1 Home Page

This is the home page of our website. It contains hyperlinks to various sections of the website such as Active Campaign, how it works and Create Campaign. User can continue as a guest if they don't want to connect wallet and authorize to the app.
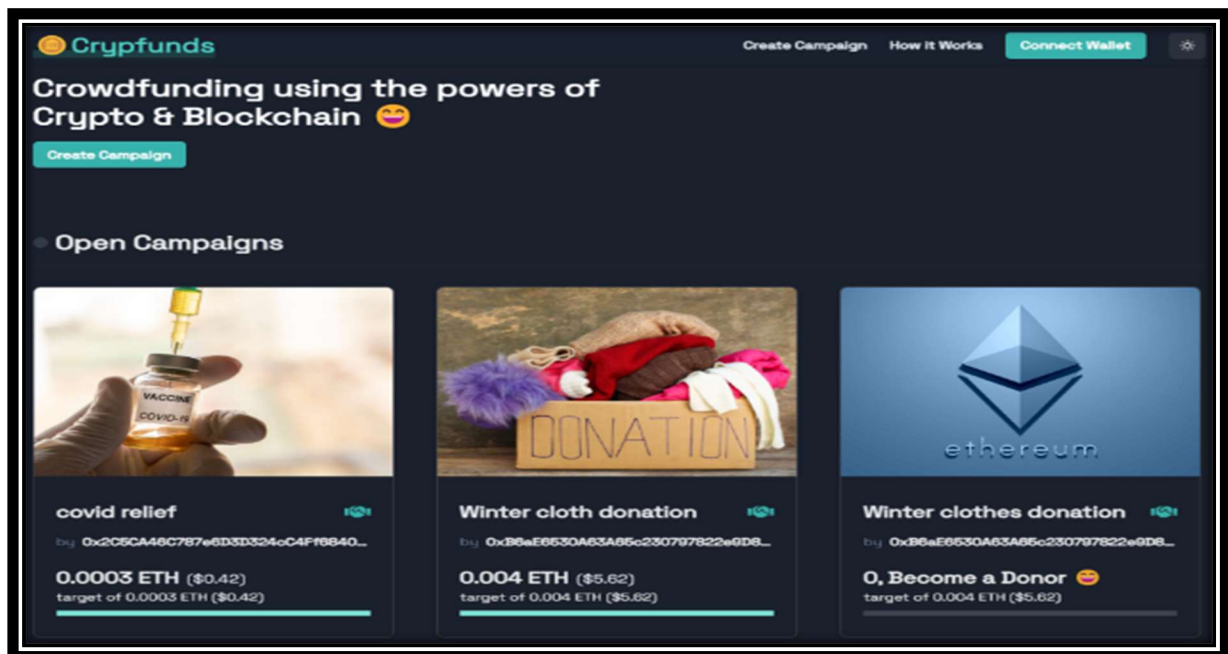

Fig.7.2 Create Campaign Page

VIII. CONCLUSION

We have designed a platform partially in which proper engineering knowledge has been applied. Conventional crowdfunding methods have long suffered from lack of transparency and fraud; with help of problem analysis it was seen that it is an avoidable problem, and we have implemented a solution that can do away with these long-standing problems with help of modern tools usage such as solidity and web3. We have applied algorithms and knowledge to analyze the social problems in crowdfunding and provide a modern engineering solution. Then we have designed the application in two modules. We have investigated the available application to find out the new solutions and updates. The aim to have a transparent, anti-fraudulent, decentralized platform and environment has been achieved to a great extent. We implemented this project with proper team work and industry level standards have been maintained. This project has covered the weak points of general crowdfunding platforms to provide transparency to the process of crowdfunding and build trust among society by ethical practices and transparency, so that they may contribute their wealth to good ethical causes without fear of fraud.

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