Crowdfunding Using Blockchain

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Abstract: The issue of transparency and security is very paramount in any organization, therefore the intention to provide a reliable, secured, transparent and decentralized solution is achieved by developing a blockchain-based crowdfunding web application. This crowdfunding application is not just like any other application which just allows people to invest their money, but this platform also gives an assurance to the backers that returns will be guaranteed. This will be a multi-user application with three different types of users: Admin, Backers, and Start-up. Admin can approve start-ups for listing. Start-ups can view the status of approval of their projects and funds raised in real-time. Backers can view the progress of the projects that they are funding as well as the general information about other projects listed on the application.

Keywords: Crowdfunding, Blockchain, Decentralize, Smart Contract, Ethereum.

I. INTRODUCTION

Crowdfunding is a popular method of raising funds for projects, startups, and causes by soliciting small contributions from a large number of people. This approach has gained popularity in recent years, as it provides an alternative to traditional fundraising methods, such as venture capital, loans, or grants.

Crowdfunding platforms allow creators to pitch their ideas and attract supporters, who can contribute funds in exchange for rewards, equity, or simply to support the cause. These platforms have enabled a wide range of projects to come to life, from creative endeavors like films and music albums, to tech startups and social impact initiatives.

One of the challenges of traditional crowdfunding platforms is the need for intermediaries, such as payment processors and banks, which can increase transaction fees and processing times. Additionally, traditional crowdfunding platforms may not provide sufficient transparency and accountability, leading to potential fraud or misuse of funds.

To address these issues, some crowdfunding platforms are exploring the use of blockchain technology, which offers a decentralized and transparent way of conducting transactions and tracking contributions. Blockchain-based crowdfunding can potentially reduce costs, enhance security and privacy, and provide greater transparency and accountability to creators and investors.

II. APPLICATION OF CROWDFUNDING PLATFORM

Crowdfunding using blockchain technology has many potential applications, including:

Crowdfunding for startups: Blockchain-based crowdfunding platforms can enable startups to raise funds from a global pool of investors, without the need for intermediaries or traditional banking systems. Investors can contribute funds in exchange for equity or tokens, and can track the progress of the project through the blockchain ledger.

Crowdfunding for social impact: Blockchain-based crowdfunding can be used to support social impact initiatives, such as renewable energy projects or humanitarian causes. These initiatives can benefit from the transparency and accountability provided by the blockchain, as donors can track how their contributions are being used.

Crowdfunding for creative projects: Blockchain-based crowdfunding platforms can also be used to support creative projects, such as films, music, or art. Creators can offer rewards or tokens in exchange for contributions, and can use the blockchain to verify ownership and distribution rights.

Crowdfunding for real estate: Blockchain-based crowdfunding can also be used to raise funds for real estate projects, such as development or renovation. Investors can contribute funds in exchange for tokens representing fractional ownership of the property, and can track the value of their investment through the blockchain.

III.   BLOCKCHAIN TECHNOLOGY IN CROWDFUNDING

In Blockchain based crowdfunding system, various technologies can be employed, including:

Blockchain platform: The project would use a blockchain platform to store and manage transaction records. Popular blockchain platforms for crowdfunding include Ethereum, Stellar, and Hyperledger.

Smart contracts: Smart contracts are self-executing programs that run on a blockchain platform and automatically enforce the rules of the crowdfunding campaign. They can be used to manage the distribution of funds, define the terms of the campaign, and verify contributions.
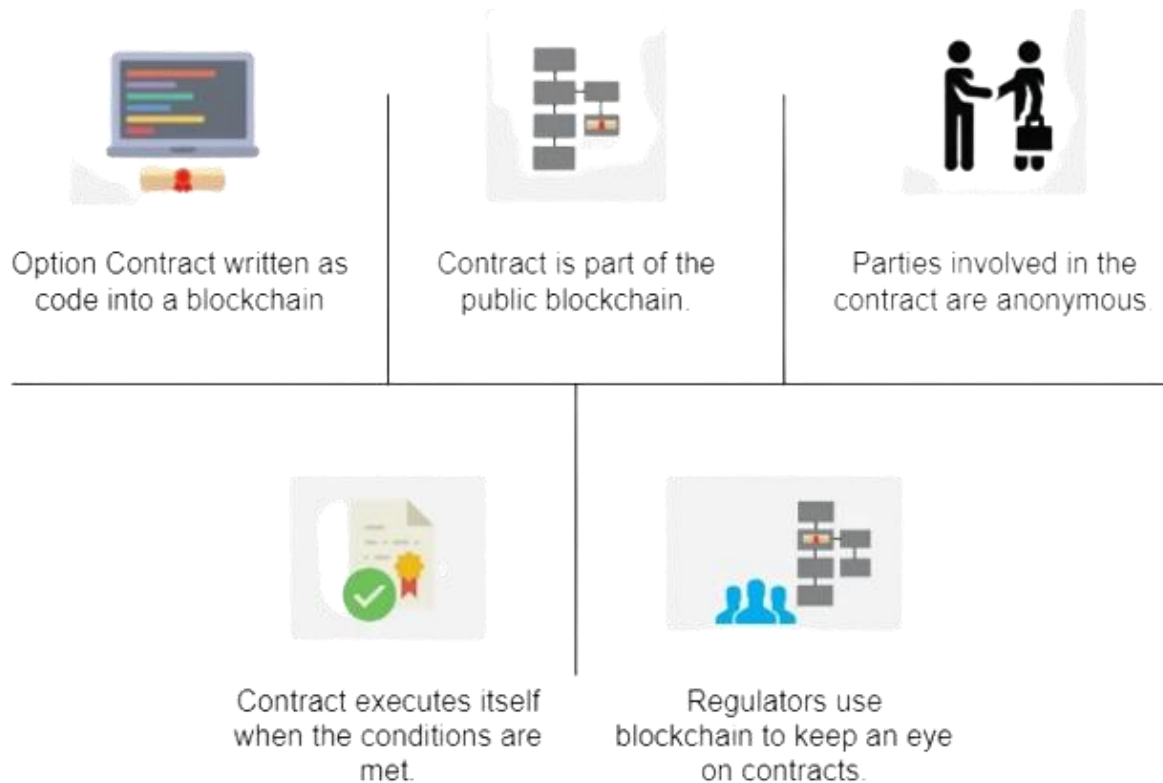

Option Contract written as code into a blockchain

Contract is part of the public blockchain.

Parties involved in the contract are anonymous.

Contract executes itself when the conditions are met.

Regulators use blockchain to keep an eye on contracts.

Figure 1 Smart Contract

Cryptocurrency wallets: Cryptocurrency wallets are used to store and manage digital tokens or coins. Investors would need a compatible wallet to participate in the crowdfunding campaign.

Payment gateways: Payment gateways would allow investors to contribute funds using fiat currency or cryptocurrency. This could include services like PayPal, Stripe, or Coinbase.

Front-end web development: The project would require a web application that allows creators to launch crowdfunding campaigns and investors to participate in them. This would involve using web development frameworks like React, Angular, or Vue.js.

Back-end development: The project would also require server-side development to manage the storage and retrieval of data from the blockchain. This could involve using technologies like Node.js, Python, or Ruby on Rails

IV.   RESEARCH METHODOLOGY

"Blockchain-based Crowdfunding: Towards a Decentralized Business Model" by Hsin Lee, Chen-Chia Chuang, and Yi-Ming Tu (2020): This study explores the potential of blockchain-based crowdfunding as a decentralized business model. The authors discuss the advantages and challenges of the approach, as well as its potential impact on the traditional crowdfunding industry.

"Crowdfunding on the Blockchain: A Decentralized Platform for Investors and Entrepreneurs" by Gustavo Fortes Tondello, Pablo Moreno-Ger, and Lennart E. Nacke (2019): This study examines the potential of blockchain-based crowdfunding as a means of reducing the barriers to entry for entrepreneurs and providing investors with more transparency and control over their investments. The authors also discuss the potential impact of blockchain-based crowdfunding on the traditional financial industry.

"Blockchain and Crowdfunding: The Role of Intermediaries in Disintermediated Markets" by Laura L. Spagnoli, Gianfranco Gianfrate, and Giulio Greco (2019): This study explores the role of intermediaries in blockchain-based crowdfunding and the potential for disintermediation. The authors argue that while blockchain-based crowdfunding has the potential to reduce the need for intermediaries, some level of intermediary involvement may still be necessary.

"Blockchain Crowdfunding: A New Platform for Secure and Transparent Fundraising" by Chien-Hsun Chen and Wei-Chung Chang (2018): This study discusses the potential of blockchain-based crowdfunding as a means of providing a more secure and transparent fundraising platform. The authors also examine the potential impact of blockchain-based crowdfunding on the traditional crowdfunding industry.

"Crowdfunding with Cryptocurrencies and the Relevance of Security Design" by Erik Theissen and Christian Westheide (2018): This study examines the potential of using cryptocurrencies in crowdfunding and the importance of security design. The authors discuss the advantages and challenges of using cryptocurrencies in crowdfunding and argue that effective security design is crucial for ensuring the success of blockchain-based crowdfunding.

V. PROBLEM STATEMENT

The problem statement for crowdfunding using blockchain can be broadly defined as the need for a decentralized, secure, and transparent crowdfunding platform. Traditional crowdfunding platforms are often centralized, which means that a third-party intermediary is needed to facilitate transactions and ensure trust between the parties involved. This centralized approach can lead to higher fees, longer processing times, and a lack of transparency for both investors and entrepreneurs.

Moreover, traditional crowdfunding platforms can be vulnerable to cyber-attacks, fraud, and other forms of misconduct. This lack of security can deter potential investors and reduce the overall credibility of the platform. Additionally, traditional crowdfunding platforms may not be accessible to everyone, as they often have high entry barriers and strict requirements for investors and entrepreneurs.

Blockchain technology can address these challenges by providing a decentralized and transparent platform for crowdfunding. Blockchain-based crowdfunding can potentially reduce the need for intermediaries, lower transaction fees, increase security, and provide greater transparency for investors and entrepreneurs. Additionally, blockchain-based crowdfunding can potentially provide greater access to funding for underrepresented groups and individuals who may not have access to traditional financing options.

Therefore, the problem statement for crowdfunding using blockchain is to develop a secure, decentralized, and transparent platform that enables entrepreneurs to access funding from a broader pool of investors and provides investors with greater transparency, security, and control over their investments.

VI. PROPOSED METHODOLOGY

Platform design: The first step is to design the crowdfunding platform that will be built on blockchain technology. This involves determining the requirements of the platform, such as the types of crowdfunding models to be supported, the security measures to be implemented, and the user interface design.

Blockchain selection: The next step is to select the appropriate blockchain technology that will be used to develop the platform. Some of the popular blockchain technologies for crowdfunding include Ethereum, Stellar, and Hyperledger Fabric.

Smart contract development: Once the blockchain technology has been selected, the next step is to develop the smart contracts that will be used to govern the crowdfunding transactions on the platform. Smart contracts are self-executing contracts with the terms of the agreement between buyer and seller being directly written into lines of code.

Integration with payment systems: The platform needs to integrate with payment systems to enable investors to fund their accounts and for entrepreneurs to withdraw funds. Integration with payment systems can be achieved using cryptocurrency wallets or traditional payment gateways.

Testing and deployment: The platform needs to be tested extensively to ensure that it is secure, functional, and user-friendly. Once the testing is completed, the platform can be deployed to the blockchain network.

Maintenance and updates: The final step is to maintain and update the platform to ensure that it remains secure and meets the evolving needs of investors and entrepreneurs.

VII. IMPLEMENTATION

Implementation of crowdfunding using blockchain typically involves the following steps:

Design the user interface and user experience: The first step in implementation is to design the user interface and user experience of the crowdfunding platform. This includes the design of the landing page, registration and login screens, dashboard, project pages, and payment system integration.

Select the blockchain technology: The next step is to select the appropriate blockchain technology for the crowdfunding platform. Factors such as scalability, transaction speed, security, and community support need to be considered when selecting a blockchain technology.

Develop the smart contract: The smart contract is the backbone of the blockchain-based crowdfunding platform. It defines the rules of the crowdfunding campaign, including the contribution limits, rewards, and refund policy. A smart contract can be written in a programming language such as Solidity, and can be deployed to the blockchain network.

Integrate payment systems: To facilitate the funding of the crowdfunding campaigns, payment systems need to be integrated into the platform. This can be achieved using cryptocurrency wallets or traditional payment gateways such as PayPal, Stripe, or Braintree.

Test the platform: The next step is to test the platform extensively to ensure that it is secure and user-friendly. This includes testing the smart contract, payment systems, and user interface.

Deploy the platform: Once the testing is complete, the platform can be deployed to the blockchain network.

Maintain and update the platform: The final step is to maintain and update the platform to ensure that it remains secure, functional, and meets the evolving needs of investors and entrepreneurs. This includes ongoing security audits, bug fixes, and feature updates.

VIII. ADVANTAGES

Advantages of crowdfunding using blockchain:

Security: The use of blockchain technology ensures that all transactions are secure and transparent, providing increased protection against fraud and hacking.

Decentralization: The decentralized nature of blockchain means that there is no central authority controlling the crowdfunding campaign, allowing for greater autonomy and independence for both the creators and backers.

Cost-effectiveness: Crowdfunding on the blockchain can be more cost-effective than traditional crowdfunding methods, as it eliminates the need for intermediaries and reduces transaction fees.

Global access: Blockchain-based crowdfunding platforms can be accessed by anyone, anywhere in the world, opening up opportunities for creators and backers to connect across borders and regions.

IX. DISADVANTAGES

Disadvantages of crowdfunding using blockchain:

Technical expertise: The complexity of blockchain technology may make it difficult for some individuals to participate in crowdfunding campaigns.

Limited adoption: Blockchain technology is still relatively new and not yet widely adopted, which may limit the number of backers willing to participate in blockchain-based crowdfunding campaigns.

Regulatory uncertainty: The regulatory framework surrounding blockchain-based crowdfunding is still in development, creating uncertainty around legal compliance and potential risks.

Volatility: Cryptocurrencies used in blockchain-based crowdfunding can be highly volatile, making it difficult to predict the value of investments and returns.

X. CONCLUSION

In conclusion, blockchain technology offers a secure and transparent platform for crowdfunding that can benefit both investors and entrepreneurs. By implementing a crowdfunding platform using blockchain technology, investors can have more confidence in the security of their investments, and entrepreneurs can have access to a wider pool of potential investors.

The proposed methodology for implementing crowdfunding using blockchain technology involves designing the platform, selecting the blockchain technology, developing the smart contracts, integrating payment systems, testing and deploying the platform, and maintaining and updating it over time.

However, it is important to note that implementing a blockchain-based crowdfunding platform can be a complex and challenging process that requires significant technical expertise. Nevertheless, the potential benefits of implementing such a platform are numerous and can help to transform the way that crowdfunding is conducted.

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