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Visionary Funds: A Secure and Transparent Crowdfunding Platform

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Abstract - Blockchain crowdfunding has emerged as a popular method of raising funds for a wide range of projects and initiatives. It has a number of advantages over conventional crowdsourcing models, including enhanced security, transparency, and decentralization. By utilizing blockchain technology, block chain crowdfunding eliminates the need of intermediaries, allowing individuals or organizations to connect directly with backers.

The main focus is to provide an alternative method for individuals or organizations to raise funds without the need for intermediaries or third-party services. The scope involves developing a blockchain-based crowdfunding platform and conducting a technical analysis of its functionalities. The methodology used to solve this problem includes conducting extensive research on existing blockchain-based crowdfunding platforms and determining the necessary technical requirements for building a successful platform**.**

Keywords: blockchain, crowdfunding, decentralization, intermediaries, backers.

Introduction

Blockchain crowdfunding has emerged as a popular method of raising funds for a wide range of projects and initiatives. It has a number of advantages over traditional crowdfunding models, including enhanced security, transparency, and decentralization. By utilizing blockchain technology, blockchain crowdfunding eliminates the need for intermediaries, allowing individuals or organizations to connect directly with backers. This lowers transaction costs while also increases the potential amount of funds that might raise. In a block chain crowdfunding campaign, fundraisers can offer various rewards or tokens to their backers, this might vary from basic thank-you notes to exclusive access to the project or product being funded. These rewards are typically specified in the smart contract governing the campaign and are distributed automatically when the funding goal is reached.

One of the main aspects of the block chain crowdfunding is employing smart contracts. These are self-executing agreements that are kept on the block chain and automatically enforce the terms of the agreement. Smart contracts provide an efficient transparent manner of handling transactions, reducing the necessity of involving humans and the potential for fraud. Overall, blockchain crowdfunding offers a secure, decentralized, and efficient way of raising funds that may bring about a revolution the fundraising landscape. With its transparent and secure nature, blockchain crowdfunding can help to build trust and increase participation in fundraising campaigns.

Conventional crowdfunding sites frequently experience problems such a dearth of transparency, exorbitant fees, and the potential for fraud or money being used inappropriately. These problems may damage platform credibility and discourage potential backers from taking part. The volatility of bitcoin prices, the absence of regulatory control, and the possibility of fraud are just a few of the difficulties that decentralised crowdfunding encounters. Consequently, the issue statement for decentralised crowdfunding is how to use Smart contracts and blockchain

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technology to improve the efficiency, transparency, and accessibility of the financing model while simultaneously addressing the difficulties and hazards related to this developing model.

The main objective of this paper is Raising funds, improving access to capital, creating a decentralized network, supporting social and environmental causes and Creating a community.

I. Related Works

Lin, Z., Zheng, M., & Zhang, J. (2019) [1], investigates the impact of blockchain technology on crowdfunding platforms using an empirical study of a popular Chinese platform. They blockchain can increase transparency and reduce information asymmetry, leading to greater funding success. However, limitations include a lack of data on the long-term effects and potential unintended consequences of implementing blockchain in crowdfunding.

Ahlers, G. K., Cumming, D., Günther, C., & Schweizer, D. (2015) [2], examines signaling in equity crowdfunding campaigns, finding that signals such as financial performance, founder experience, and social networks can positively influence funding outcomes. Limitations include a focus on a single platform and a lack of analysis of the impact of signaling on post-campaign success.

Agrawal, A., Catalini, C., & Goldfarb, A. (2015) [3], examines the impact of geography and social networks on investment decisions in crowdfunding campaigns, finding that investors tend to invest in projects close to their location and within their social networks. Limitations include a focus on a single crowdfunding platform and a dearth of data on the long-term success of funded projects.

Burtch, G., Ghose, A., & Wattal, S. (2013) [4], investigates the factors that influence contribution patterns in crowdfunding campaigns, in addition the impact of those patterns on campaign success. Limitations of the research include a focus on a single crowdfunding platform and a dearth of consideration for the varying characteristics of different types of crowdfunding campaigns.

Zhang, Y., Chen, Y., & Wang, Y. (2018) [5]. provides an overview of the crowdfunding literature, highlighting various research themes, methodologies, and theoretical perspectives. Limitations of the review include a lack of in-depth analysis of individual studies and a focus mainly on equity crowdfunding, ignoring other forms such as reward and donation-based crowdfunding.

Beck, R., Müller-Bloch, C., & King, J. L. (2018) [6], applies Coase's theory of the firm to blockchain and distributed ledger technology governance, finding that there are challenges in creating efficient governance structures due to the unique characteristics of the technology.

Colombo, M. G., Franzoni, C., & Rossi-Lamastra, C. (2015) [7], investigate how internal social capital of the project initiators in crowdfunding campaigns affects early contribution behavior of investors. Results show that a higher level of internal social capital leads to more and larger early contributions, highlighting the importance of social networks in crowdfunding. Limitations include a focus on a specific type of crowdfunding platform and the possibility of unobserved factors influencing the results.

Panagiotis, G., Stamatis, K., & Tsekrekos, A. E. (2019) [8], presents a comprehensive survey of security issues and challenges associated with blockchain technology, such as hacking attacks, consensus mechanisms, and smart contract vulnerabilities. The limitations include the dynamic and rapidly evolving nature of the blockchain technology, which requires ongoing updates and improvements to address emerging security threats.

The literature survey on blockchain crowdfunding has revealed a variety of insights and perspectives on this emerging industry. The survey has examined various features of blockchain based crowdfunding, including its potential to support sustainable development goals, its impact on traditional financial institutions, and the regulatory challenges faced by the industry. Factors influencing campaign success, such as trust and transparency, have also been explored. While blockchain crowdfunding is still in its infancy, the papers surveyed suggest that It could be able to disrupt traditional crowdfunding models and provide new opportunities for investors and entrepreneurs alike.

II. Proposed Work

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System design is an essential component of building a blockchain crowdfunding platform that is secure, reliable, and user-friendly. The system design process for a blockchain crowdfunding project starts by identifying the functional and non-functional requirements of the platform. The system should have features such as user authentication, secure transactions, smart contract execution, and data privacy. The design approach ought to take into account the technical challenges associated with blockchain technology, such as scalability, network congestion, and mining costs.

USER INTERFACE DESIGN

Overall, the design of the UI will be visually appealing and easy to navigate. The color scheme is consistent across all pages, and the fonts are legible and easy to read. The application is web-responsive, so users can access it from their computers. It is also optimized for search engines to improve its visibility and reach. A login page, which should be simple and user-friendly, with a clear prompt to log in or register. Users should have the option to sign in with their email address or social media accounts, and there should also be a "forgot password" option. The registration page should capture basic information such as the user's name, email address, and password. The rough draft, which includes some features, is shown below Figure 3.1.

Figure 3.1 – LoginPage

Home page is that, contains the details of all the campaigns and its navigatation to different links and have various button like create campaign button, search bar and navigation bar as shown in Figure 3.2.

Figure 3.2 – HomePage

All the information of a particular campaign can directly navigate to donate options. It is simple yet it has all the functionalities as shown in Figure 3.3.

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Figure 3.3 - Donate Page

And, the next page be employed to create and start a campaign for a particular cause and it will have a form like structure. Will only be available to registered users. Figure 3.4 shows the create campaign page.

Figure 3.4 - Create Campaign Page

Explanation of the components

1) Login Process: Before establishing a connection to the system, the user will be prompted to log in to their MetaMask account, through a MetaMask browser application.

2) After successful sign-in, the user can now select from the various charity organizations listed to donate

3) Recording the donations on Smart Contracts: When the transaction between donor and beneficiary is established, the donor account number is added to the smart contract.

4) With the goal of information disclosure, the information about donations is completely public. Our system provides smart contract datasearch functions, which can return the donations made in the name of the listed organization. The flow diagram for the above is shown in Figure 3.5 :
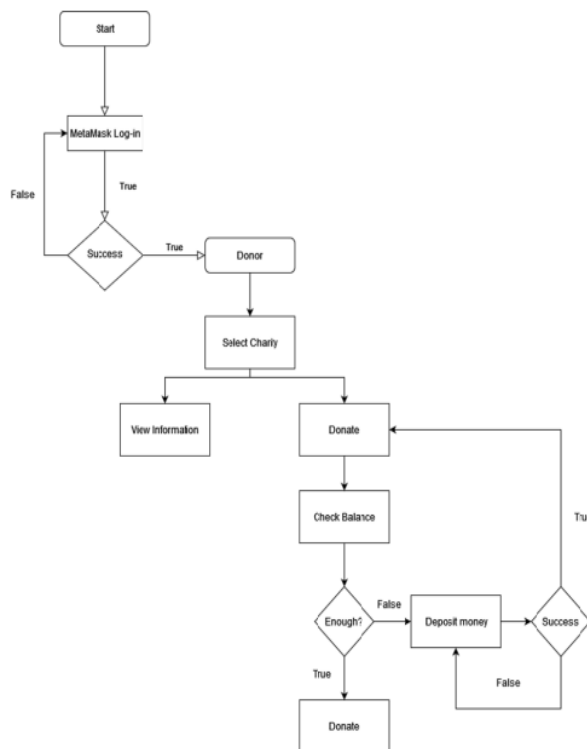
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Figure 3.5 - Flow Diagram

III.Implementation

Crowdfunding using blockchain technology has gained popularity due to its decentralized, transparent, and secure nature. Here are some tools that are used for a crowdfunding using blockchain

Ethereum: Ethereum is one of the most popular blockchain platforms for creating and deploying smart contracts. It is widely used for creating decentralized applications (dApps) and is the preferred platform for launching initial coin offerings (ICOs).

Solidity: Solidity is a programming language used for writing smart contracts on the Ethereum blockchain.

Metamask: Metamask is a browser add-on that enables users to communicate with Ethereum-based dApps directly from their web browser.

Web3: Web3 has the potential to create a more decentralized and transparent crowdfunding ecosystem that empowers creators and investors.

Algorithm:

The implementation of an algorithm for a crowdfunding project using blockchain involves using a distributed ledger to securely and transparently track transactions and manage the flow of funds between backers and project creators. Here's a high-level overview of the algorithm and how it could be implemented:

Step 1: Create the smart contract.

Step 2: Define the fundraising goal and deadline.

Step 3: Allow backers to pledge funds.

Step 4: Enforce the funding threshold.

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Step 5: Distribute funds to the project creator.

Step 6: Update the project status.

Overall, the implementation of the crowdfunding algorithm using blockchain involves creating a secure and transparent mechanism for managing the flow of funds between backers and project creators. By using a smart contract that runs on the blockchain, the algorithm can automatically enforce the rules of the crowdfunding campaign and provide a reliable way to fund innovative projects.

Implementation of the modules:

The execution of modules involves breaking down the project into smaller, more manageable components that can be developed and tested independently. Here are some common modules are implemented in a crowdfunding project using blockchain:

Authentication module is responsible for authenticating users and ensuring that only authorized users are able to access the platform. This module might include features like two-factor authentication and password hashing to ensure the security of user accounts.

Funding module is responsible for managing the flow of funds between backers and project creators. This module might include features like automatic refunds for failed projects and real-time tracking of funds raised.

Smart contract module is responsible for designing and implementing the smart contracts that define the rules and conditions of the crowdfunding campaign. This module might include tools for compiling and testing smart contracts, as well as monitoring the status of deployed contracts on the blockchain.

User interface module is responsible for providing a user-friendly interface for backers and project creators to interact with the crowdfunding platform. This module might include features like project listings, search functionality, and real-time updates on the status of projects.

Compliance module is responsible for ensuring that the crowdfunding platform complies with relevant regulations and laws. This module might include features like KYC (Know Your Customer) checks and AML (Anti-Money Laundering) procedures to prevent fraudulent activity on the platform.

Analytics module is responsible for collecting and analysing data on the performance of crowdfunding campaigns. This module might include features like real-time data visualization and reporting tools to help project creators and backers make informed decisions.

The implementation of an algorithm and modules for a crowdfunding project using blockchain requires careful planning and development to ensure the platform is secure, scalable, and user-friendly. It is important to consider factors such as authentication, funding management, smart contract deployment, compliance, user interface, and analytics in order to create a successful crowdfunding platform. With its decentralized, transparent, and secure nature, the potential for blockchain to change the way of interaction with one another and conduct business in the electronic age.

Test cases:

Here are some test cases that can be used for testing a crowdfunding using blockchain:

1. Authentication Test Cases:

- Verify that users can create an account and log in successfully.

- Verify that users are prompted to set up two-factor authentication during account creation.

- Verify that password hashing is implemented to ensure the security of user accounts.

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2. Funding Test Cases:

- Verify that backers can make a contribution to a project using cryptocurrency.

- Verify that the platform tracks the amount raised in real-time and displays it on the project page.

- Verify that the platform automatically refunds backers if the project fails to reach its funding goal.

3. Smart Contract Test Cases:

- Verify that smart contracts can be created and deployed successfully.

- Verify that the smart contract includes all the necessary rules and conditions for the crowdfunding campaign.

- Verify that the smart contract can be updated if needed.

4. User Interface Test Cases:

- Verify that the platform displays project listings in an organized and user-friendly manner.

 - Verify that search functionality works properly and returns relevant results.

- Verify that the platform provides real-time updates on the status of projects.

5. Compliance Test Cases:

- Verify that the platform includes KYC (Know Your Customer) checks for all users.

- Verify that the platform includes AML (Anti-Money Laundering) procedures to prevent fraudulent activity.

- Verify that the platform complies with all relevant regulations and laws.

6. Analytics Test Cases:

- Verify that the platform collects data on the performance of crowdfunding campaigns.

- Verify that the platform provides real-time data visualization and reporting tools to help project creators and backers make informed decisions.

- Verify that the platform protects user data and ensures privacy.

Overall, testing for a crowdfunding project using blockchain involves testing multiple components, including authentication, funding management, smart contract deployment, user interface, compliance, and analytics. By testing all aspects of the platform, developers can ensure that it meets all requirements and is ready for deployment.

Conclusion

The significance of a proposed crowdfunding platform can depend on several factors, such as its target market, its unique features. A crowdfunding platform can help entrepreneurs and creators access capital that might not be available through traditional financing channels. Crowdfunding can help democratize investing by allowing a broader range of individuals to invest in promising projects. A crowdfunding platform can help build a community of investors and supporters around a particular project or cause. Crowdfunding can be a valuable tool for testing and validating new products or ideas before they are launched.

A successful crowdfunding campaign can help build a brand and generate positive publicity for a project or company. Crowdfunding can be a powerful tool for supporting social impact projects, such as those focused on sustainability, social justice, or community development.

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Overall, a well-designed crowdfunding platform can provide a range of benefits to both creators and investors, including increased access to capital, democratization of investing community-building, testing and validation, brand-building and social impact.

Future Work

Some potential directions for the future of crowdfunding platforms are Integration with blockchain technology, Expansion into new markets, Greater use of data and analytics, Emphasis on social impact and Use of AI and machine learning. Overall, the future of crowdfunding platforms is likely to be shaped by a range of technological, market, and regulatory factors. By embracing innovation, collaboration, and social impact, crowdfunding platforms can help support the growth and success of the crowdfunding ecosystem in the years to come.

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