ISSN 2455 – 9091
IJCSET MAY Volume 10 Issue 5
International Journal of Computer Science Engineering and Technology (IJCSET)
https://www.doi.org/ 10.5281/zenodo.11368697

Crowd Funding Using Web 3.0 and Blockchain

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ABSTRACT - Crowdfunding is a novel technique to directly generate cash and obtain investors for new commercial ventures from the public, rather than generating funds in traditional ways, such as leasing money from banks or pitching project ideas in front of investors. Crowdfunding websites connect investors and artists on a platform that makes investors easily accessible. Blockchain-based crowdfunding offers an alternative to the traditional method of raising capital for businesses. Typically, when creators need money for their initiatives, they must develop marketing plans to draw in individuals or organizations. The three-tier structure of current crowdfunding approaches includes a project creator who proposes the idea of the project to be funded, an organization or investor who invests in the project, and a platform that combines these two elements to create a successful company.

Key Words: [Blockchain, Ethereum, MetaMask wallet, Smart Contracts, Proxy, Immediate feedback, Security management.]

1. INTRODUCTION

The traditional crowdfunding landscape is undergoing a significant transformation with the emergence of Web3 and blockchain technology. This project aims to harness the potential of this revolutionary technology to create a decentralized, transparent, and secure crowdfunding platform, empowering creators and backers alike.

At the heart of this project lies the concept of smart contracts, self-executing agreements that automate the entire fundraising process. These contracts will be responsible for defining campaign parameters (funding goal, deadline, type), securing funds in escrow, distributing funds based on success or failure, and managing rewards for backers.

Building on top of this core functionality, the project will prioritize user-friendly interfaces (UI) and user experience (UX). Creators will benefit from an easy-to-use interface for campaign creation and management, while backers will enjoy features like campaign browsing, secure contribution functionalities, and real-time progress tracking. Additionally, fostering a sense of community through forums or chat functionalities will be crucial for building trust and engagement.

The project leverages the inherent security benefits of blockchain by emphasizing decentralized storage of campaign data and transaction history, ensuring auditable transactions and secure user access.

To further enhance the platform's appeal, the project explores additional features like a reputation system for user trust, governance mechanisms for community involvement, and potential integration with DeFi protocols for expanded financial options.

Finally, the project acknowledges the importance of legal and regulatory considerations, adhering to all relevant crowdfunding and cryptocurrency regulations in the target jurisdiction.

By incorporating these elements, this Web3 crowdfunding project on blockchain technology aspires to revolutionize the fundraising experience, fostering a secure, transparent, and community-driven ecosystem for creators and backers to connect and thrive.

Blockchain: A distributed database that securely stores and verifies all exam data, including questions, answers, and grades. Think of it as a tamper-proof, public ledger accessible to authorized participants.

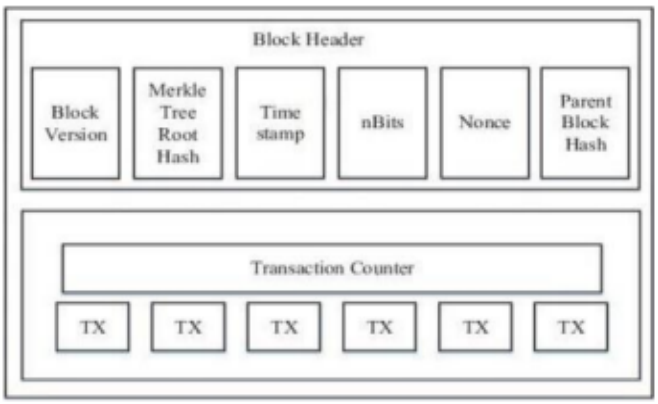

Figure 1 : Blockchain Block

Ethereum: A popular blockchain platform that supports smart contracts, self-executing code used to automate grading, plagiarism detection, and other processes.

MetaMask Wallet: A secure digital wallet used by students to access the exam platform and store their credentials.

Smart Contracts: Automated programs on the blockchain that govern exam rules, grade answers, and manage data access.

Proxy Contract: This is the contract that interacts with users and other contracts. It contains minimal logic and serves as an intermediary between the external world and the implementation contract. The proxy contract's address remains constant over time.

It also uses an efficient proxy re-encryption scheme which allows that the data is only visible by the owner and the person present in the smart contract.

Security Management: Robust security protocols built into the blockchain infrastructure safeguard users data from unauthorized access and manipulation.

Future of Crowdfunding dApp:

The future of crowdfunding decentralized applications (dApps) is poised for substantial growth and innovation. This research paper outlines key areas of future development that will shape

the evolution of crowdfunding dApps, driven by advancements in blockchain technology, user demand, and regulatory environments.

i. Advanced Smart Contract Capabilities

Smart contracts are the backbone of dApps, and their capabilities will continue to evolve. Future developments will focus on creating more sophisticated smart contracts that can handle complex fundraising structures and contingencies. This includes:

Milestone-Based Funding: Releasing funds in stages based on the achievement of predefined milestones, ensuring that project creators remain accountable.

Automated Dispute Resolution: Integrating decentralized arbitration mechanisms to resolve disputes between backers and project creators efficiently.

ii. Interoperability and Cross-Chain Solutions

Crowdfunding dApps will increasingly adopt cross-chain interoperability to leverage the unique features of different blockchain networks. This will involve:

Cross-Chain Token Transfers: Allowing backers to contribute using tokens from various blockchain ecosystems, enhancing liquidity and participation.

Unified Interfaces: Developing user-friendly interfaces that abstract the complexities of multiple blockchains, providing a seamless experience for users.

iii. Enhanced Decentralized Identity (DID) Systems

Decentralized identity systems will play a crucial role in the future of crowdfunding dApps by ensuring secure, verifiable identities while maintaining user privacy. Future developments will include:

Verifiable Credentials: Issuing and verifying credentials on the blockchain to prove the identity and qualifications of project creators.

Reputation Systems: Building reputation scores based on past activities and feedback, helping backers make informed decisions.

iv. AI and Machine Learning Integration

Artificial intelligence (AI) and machine learning will enhance the functionality and user experience of crowdfunding dApps. Potential applications include:

Fraud Detection: Using AI to detect fraudulent activities and patterns, protecting backers from scams.

Personalized Recommendations: Employing machine learning algorithms to recommend projects to backers based on their preferences and past contributions.

OBJECTIVE:

Decentralize crowdfunding: Eliminate the need for central authorities, empowering creators and backers directly.

Enhance transparency: Ensure complete visibility and auditability of all transactions and campaign data.

Streamline fundraising: Automate processes and reduce reliance on traditional financial systems for faster and more efficient fundraising.

Empower creators: Provide creators with a user-friendly platform for seamless campaign creation and management.

Engage backers: Offer a secure and convenient experience for backers to discover and support projects they care about.

Foster community: Build a strong and trusting community around shared passions and collaborative endeavors.

Explore potential: Investigate ways to integrate additional features like reputation systems, community governance, and DeFi functionalities for a richer platform experience.

Adhere to regulations: Ensure compliance with all relevant legal and regulatory frameworks for responsible and secure operation.

2. Literature Survey

Year: 2023

Authors: Aby Varghese, Nandhana A Regi, Sandhu Babu, Shalini Mani, Chitra Merin Varghese

Title: Crowdfunding platform using blockchain

Methodology: The methodology includes reviewing blockchain-based crowdfunding solutions, evaluating data quality, analyzing trends, and assessing evidence strength through qualitative review and meta-analysis.

Year: 2022

Authors: Ritvik Gupta, Mayank Yadav, Usha Dhankar

Title: Crowdfunding using Ethereum Blockchain

Methodology: The project uses Ethereum blockchain and smart contracts to implement a crowdfunding platform. Solidity is used to write the contract code, and Mocha and Next.js are used for testing and website development.

Year: 2020

Authors: Firmansyah Ashari, Tetuko Catonsukmoro , Wilyu Mahendra Bad , Sfenranto , Gunawan Wang

Title: Smart Contract and Blockchain for Crowdfunding Platform

Methodology: methodology used in this paper is the method of library research. This writing relies on sources from journals that have been published both internationally and nationally along with other relevant articles so that they can be used as a reference from this writing.

Year: 2023

Authors: Prasanthi Gottumukkala, Y.Sri Lalitha ,Pancherpula kalyan ,Sumer singh Ghandhi, Thungaturthi gopi puneeth , Nishesh Sharma

Title: Sustainably empowered crowdfunding through blockchain-enhanced security technology

Methodology: It proposes a system that leverages smart contracts and blockchain to streamline and automate the crowdfunding process. The system ensures transparency, security, and accountability by recording all transactions on a public ledger and eliminating the need for intermediaries.

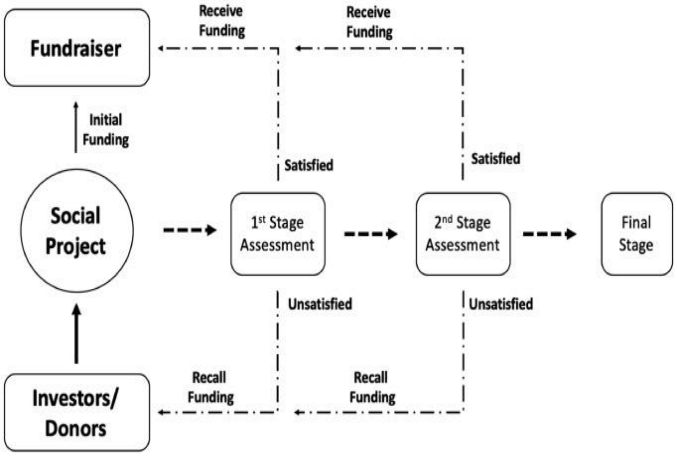

Figure 2: System Architecture

3. METHODS

A. Overview

Both Crowdfunding and Cryptocurrency is a trend on the Internet and they match perfectly. Blockchain technology is one solution that can be used to reduce the problems that occur in crowdfunding. The contract is written in a way that all money will be added to the pool. When the request meets the specified condition then all the money will be transferred to the recipient. Fig 2. shows the working model. Ethereum is an open-source, public, blockchain based distributed platform and operating to featuring smart contract functionality. It is the modified version of Bitcoin via transaction-based state transitions. Ether is a cryptocurrency which is generated and used by the Ethereum platform. Ethereum provides a decentralized operating, the Ethereum Virtual Machine (EVM), which can execute an application on the public nodes.

B. Blockchain

The blockchain is originally originated from the Bitcoin, invented by unknown people. The Blockchain is a list of continuously growing records called blocks. Each Block is linked to each other and they were secured using cryptography.Blockchain has the characteristics of integrity, decentralization, Immutability, Security, Anonymity. Blockchains can be divided into three types: 1) public blockchain (Bitcoin and Ethereum); 2) consortium blockchain (Hyperledger and Ripple) and 3) private blockchain.

C. Peer to Peer

The very important part of how blockchain works are based on Peer to Peer (P2P) system. The whole blockchain is connected to all the node in the network. This means information stored on blockchain cannot be lost or destroyed, to do so have to destroy every single node on the network and that is impossible.

D. Consensus Protocol

Consensus protocol is the most important one in the blockchain technology. The Blockchain consensus protocol is what which keeps the blocks on all the node to synchronize with each other. The term 'Consensus' means that the nodes have to agree with the same state of the blockchain. Consensus protocol allows blockchain to be updated every minute (depends on the network) and ensures that every block in the chain is true. The aim of the consensus protocol is to guarantee a single chain is used and followed by all the nodes.

E. Proof of Work

The Proof of Work is a mathematical problem one that requires considerable work to achieve the solution.

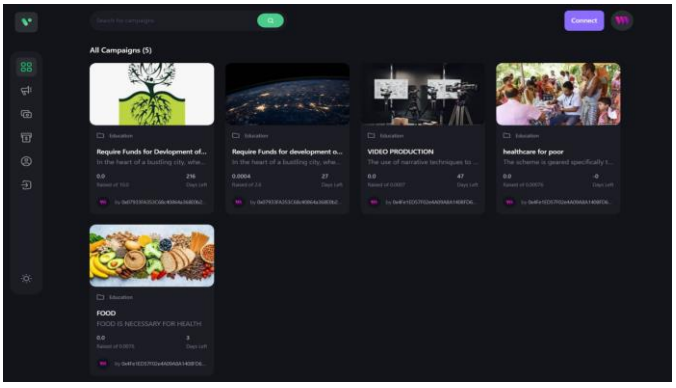

Figure: 3 All Campaigns Page

This figure shows the campaign details on the site of the crowdfunding platform, where all the campaigns are created and shows in the figure.

All the different campaigns are shown and their required need and the backers providing funds which ever they are interested.

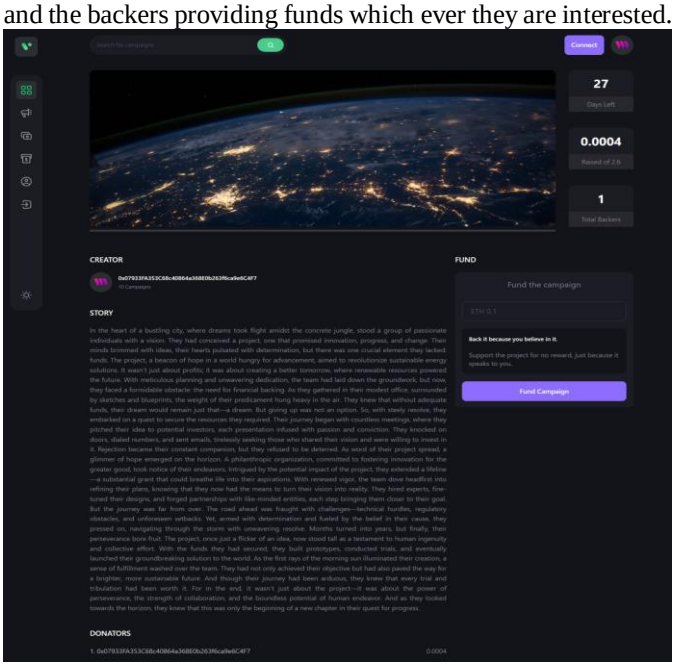

Figure: 4 Campaign Funds and Details Page

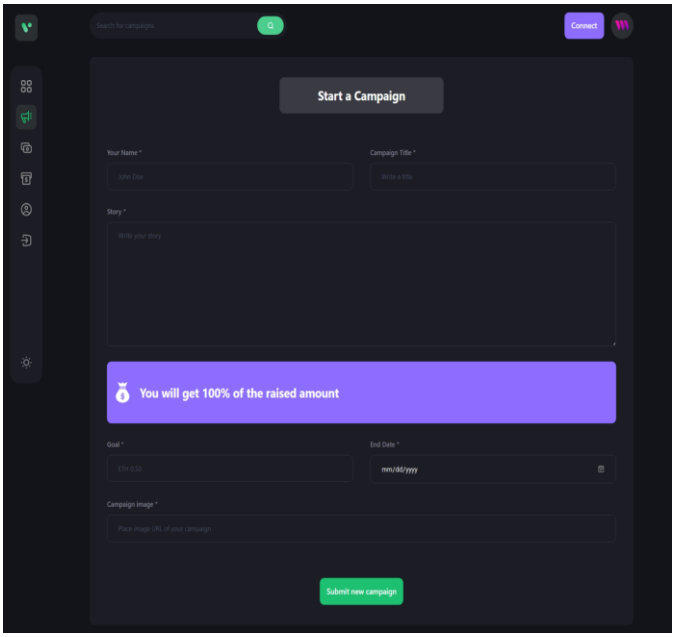

Figure: 5 Start a Campaign Form Page

4. RESULT AND DISCUSSION

The integration of blockchain technology into crowdfunding platforms introduces a transformative system approach that redefines the fundraising landscape. By harnessing the power of blockchain's decentralized ledger system, the Crowd Funding using Blockchain model ensures the security and transparency of all transactions. This innovative approach eliminates the need for intermediaries, reducing costs and enhancing trust among participants. The decentralized nature of blockchain ensures that all transactions are securely recorded and stored across a network of nodes, providing a tamper-proof record of every interaction within the crowdfunding ecosystem.

Moreover, the implementation of the Donor Guarantee Policy within this new system approach sets a higher standard for

accountability and transparency in crowdfunding platforms. Donors are provided with a level of assurance that their contributions will be utilized as intended, fostering greater trust and confidence in the crowdfunding process. This policy not only safeguards the interests of donors but also instills a sense of credibility and reliability in the platform, attracting more participants and fostering a supportive community of backers.

Additionally, the user-friendly interactive forms for campaign creation, donation, and request approval streamline the crowdfunding experience for both campaign creators and donors. These intuitive interfaces simplify the process of initiating campaigns, making contributions, and seeking approvals, thereby enhancing user engagement and participation. By incorporating these interactive features, the Crowd Funding using Blockchain model ensures a seamless and efficient crowdfunding experience for all stakeholders involved.In conclusion, the innovative system approach of Crowd Funding using Blockchain not only addresses the limitations of traditional crowdfunding platforms but also sets a new standard for security, transparency, and efficiency in fundraising endeavors. This forward-thinking approach heralds a new era of trustworthy and streamlined crowdfunding practices, empowering individuals and organizations to raise funds for their projects in a secure and transparent manner.

CONCLUSION

In conclusion, Blockchain in crowdfunding is a relatively new concept to the community. We have taken that into consideration and designed this app so that even a common man can use it with ease. But this is not the end. With the evolution of Blockchain and introducing of ICOs, our application has a bright future and a large scope for improvement and evolution. The world is still adjusting to Blockchain and Cryptocurrencies and it'll take a couple of years more for Ethereum based Dapps to become popular and to be recognized by the community. In such a situation Blockchain based crowdfunding application is a tough concept to be understood by everyone. We have taken that into consideration and designed this app so that even a common man can use it with ease. But this is not the end. With the evolution of Blockchain and introducing of ICOs, our application has a bright future and a large scope for improvement and evolution. In the future, we wish to provide an even easier and safer way for all ideas to get life through our crowdfunding application

ACKNOWLEDGEMENT

The project team would like to express their heartfelt gratitude to our alma mater Brindavan College of Engineering for giving us the opportunity and to our project mentor Prof. Arunkumar A S ouragement, and input which led us to undertake this project.

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