



# Crowd-Funding using Blockchain

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## ABSTRACT

Analyzing three research papers focused on Ethereum-based donation transactions, the study emphasizes the strengths and limitations of these platforms. While blockchain introduces transparency, trust, and security, challenges such as technical complexity, volatility, and scalability persist. This review paper explores the transformative potential of blockchain-based crowdfunding, addressing the vulnerabilities of traditional platforms, including data breaches and high fees. Smart contracts and digital identity management emerge as key methodologies to enhance privacy and decentralization. The paper highlights the global accessibility, reduced intermediaries, and immutable transactions afforded by blockchain. Despite challenges, this synthesis underscores blockchain's role in revolutionizing crowdfunding, offering insights for future research and practical applications.

## I. INTRODUCTION

Crowdfunding has emerged as a pivotal means of raising funds globally, gaining heightened significance, especially in the wake of the COVID-19 pandemic. This review delves into the innovative realm of blockchain-based crowdfunding, delineating its potential to mitigate vulnerabilities inherent in traditional platforms, such as susceptibility to data breaches, high transaction fees, and fraud. Focusing on Ethereum as a primary blockchain platform, the exploration encompasses donation-based transactions facilitated through the implementation of smart contracts using the Solidity language. The research critically examines the landscape of user financial platforms, elucidating the nuances of blockchain technology. Notably, the study underscores the imperative role of digital identity management in augmenting the security and privacy of crowdfunding transactions. Against this backdrop, the paper aims to provide a comprehensive review of existing literature, offering insights into the strengths, limitations, and user perceptions surrounding

blockchain-based crowdfunding. The research also proposes a blockchain-centric crowdfunding network designed to confer privacy, security, and decentralization, emphasizing the transformative potential of Ethereum's smart contracts in reshaping the crowdfunding paradigm.

### A. Evolution of Crowdfunding

The widespread adoption of crowdfunding as a quick and efficient fundraising method has become particularly pronounced amid the Covid pandemic. Platforms like Kickstarter.com, Indiegogo.com, and MyStartr.com exemplify the diverse range of campaigns, from individual medical assistance to large-scale funds. The speed and efficiency of crowdfunding in mobilizing funds swiftly set the stage for exploring novel approaches.

### BLOCKCHAIN'S DECENTRALIZED SOLUTION

Blockchain, with its decentralized and immutable database, offers a promising solution to the challenges faced by traditional crowdfunding platforms. By

leveraging the unique features of blockchain, such as immutability and distribution, the vulnerabilities associated with centralized control can be mitigated. The distributed ledger of blockchain not only ensures transparency but also introduces a layer of security crucial for the sensitive nature of financial transactions.

#### B. Smart Contracts and Ethereum

A focal point of this paradigm shift is the integration of Ethereum smart contracts, created using the Solidity language. These digital contracts, executing automatically when predefined conditions are met, facilitate secure and trustful transactions without the need for a central authority. MetaMask, a cryptocurrency wallet, acts as a bridge, enabling secure interactions with decentralized applications on the Ethereum network.

The objective of this review is to comprehensively examine the landscape of blockchain-based crowdfunding. By synthesizing insights from research papers, we delve into the strengths and limitations of existing platforms, analyze user perceptions, and evaluate the impact of blockchain on reshaping the crowdfunding ecosystem. Throughout this exploration, the emphasis remains on establishing a foundation for blockchain-based crowdfunding networks that prioritize privacy, security, and decentralization.

## II. LITERATURE REVIEW

### A. Crowdfunding Landscape and Traditional Challenges

The crowdfunding landscape has undergone significant transformations, especially amplified during the Covid-19 era. Platforms like Kickstarter.com and Indiegogo.com have been instrumental in enabling campaigns ranging from individual assistance to large-scale initiatives. However, inherent vulnerabilities, such as data breaches, high fees, and fraud, persist due to the anonymity of user identities, prompting the exploration of novel solutions.

### B. Blockchain as a Game-Changer:

Blockchain technology emerges as a disruptive force in addressing the shortcomings of traditional crowdfunding. With its decentralized and immutable characteristics, blockchain ensures transparency and reduces fraud risk. The versatility of the blockchain ledger and the application of smart contracts, notably in languages like Solidity and Vyper on platforms like Ethereum, redefine the possibilities for secure and automated transactions.

### C. In-Depth Exploration of Blockchain Crowdfunding Platforms

The literature navigates through diverse blockchain-based crowdfunding platforms, each offering unique features. Notable examples include LikeStarter, a decentralized autonomous organization (DAO) on Ethereum, showcasing the potential of sharing and supporting content through custom ERC-20 tokens. Modular crowdfunding platforms utilizing Ethereum and Solidity present secure and transparent transactions, albeit with potential challenges in user comprehension.

### D. Innovative Models and Potential Challenges:

Beyond the conventional crowdfunding paradigm, the literature delves into innovative economic models. WHIRL's pay-it-forward approach, creating a positive feedback loop of generosity, and cryptocurrency investment platforms like BitFund introduce unique dynamics. However, challenges such as the accumulation of Karma points and the intricacies of cryptocurrency dynamics highlight areas for further investigation.

### E. Security Enhancement and Digital Identity Management:

Recognizing the vulnerabilities of traditional crowdfunding, the literature proposes robust solutions. Integration of digital identity management with blockchain not only enhances

security but also offers a cost-effective alternative to traditional Know Your Customer (KYC) systems. This approach fortifies crowdfunding ecosystems against centralized architecture attacks, paving the way for more secure and transparent transactions.

#### F. Critical Evaluation and Research Gaps:

While current research showcases the potential of blockchain-based crowdfunding, critical evaluations pinpoint challenges. Issues such as user understanding, technical complexities, and scalability emerge as focal points requiring further exploration. The literature emphasizes the significance of ongoing research to refine existing models and address emerging challenges in this evolving landscape.

Title	Advantages	Limitations
Conveniences are undertaken	Implementing new crowdfunding campaign is not restricted by time or any location.	More investors and backers to find new ventures can use more space.
Great choice to Banks	It serves an excellent alternative for small and medium sized businesses.	Crowdfunding alternatives provide the complexity of traditional lending.
Require Lower Costs	Easy handling and decreases administrative costs.	It often charges in terms of fees to acquire the services.

#### Donation-Based Crowdfunding:

Focused on the principle of altruism, investors in donation-based crowdfunding do not seek financial returns. Typically associated with cause-oriented projects, such as charities and disaster relief efforts, contributors invest based on their belief in the project's mission. While financial

returns are absent, expressions of gratitude in the form of perks are often extended to donors.

Reasons to use :- O Various different reasons are used by individuals or organizations might choose to use donation-based crowdfunding such as

o Overall, donation-based crowdfunding can be a powerful tool for raising funds, building community, and bringing ideas to life. However, it's essential to plan and execute your campaign effectively to maximize its chances of success.

## II. PROPOSED METHOD

### A. Smart Contract Integration

The foundation of the proposed blockchain-based crowdfunding network lies in the integration of smart contracts using the Solidity language on the Ethereum blockchain. Smart contracts, as demonstrated in various platforms like LikeStarter [1], serve as digital, automated agreements that execute predefined actions when specific conditions are met. This ensures secure and trustworthy transactions, eliminating the need for a central authority and enhancing transparency in the crowdfunding process.

### B. Decentralized Application (DApp) Utilization:

Unlike traditional web-based applications, the proposed system leverages a decentralized application (DApp) model based on the Ethereum blockchain. In this paradigm, all campaign-related information, contributions, withdrawal requests, and funds are stored on an open blockchain network accessible to all participants. This implementation embraces the concept of distributed ledger technology, fostering transparency and enabling every network participant to access and validate the information recorded on the blockchain.

C. Immutable Ledger and Enhanced Security: Ensuring an immutable ledger is a cornerstone of the proposed methodology. Drawing insights from

platforms like LikeStarter, once a transaction is recorded on the blockchain, it becomes resistant to tampering. The decentralized storage of blockchain databases on every network node adds an extra layer of security, mitigating the risks associated with data breaches and unauthorized access.

**D. Currency Drawbacks:** Online money transactions have revolutionized the way people send and receive funds globally, offering unparalleled convenience and accessibility. However, despite their numerous advantages, these transactions are not without drawbacks, particularly concerning currency exchange. One significant issue arises from the fluctuating nature of exchange rates, which can result in unexpected costs for users. When converting one currency to another, individuals often encounter unfavorable rates set by banks or payment processors, leading to reduced value for their money. These hidden fees can accumulate, significantly impacting the overall cost of the transaction.

#### E. Blockchain advantages:

Blockchain technology offers several advantages over traditional online money transactions, particularly in terms of efficiency, security, and transparency. Unlike traditional online transactions, which often involve intermediaries such as banks or payment processors, blockchain transactions occur directly between users on a decentralized network. This decentralized nature eliminates the need for intermediaries, resulting in faster transaction processing times and lower transaction fees. Additionally, blockchain transactions are secured using cryptographic techniques, making them highly resistant to fraud and unauthorized access. The transparent and immutable nature of blockchain ledgers ensures that transaction records cannot be altered or manipulated, providing greater trust and accountability in currency exchange.

#### Graph:

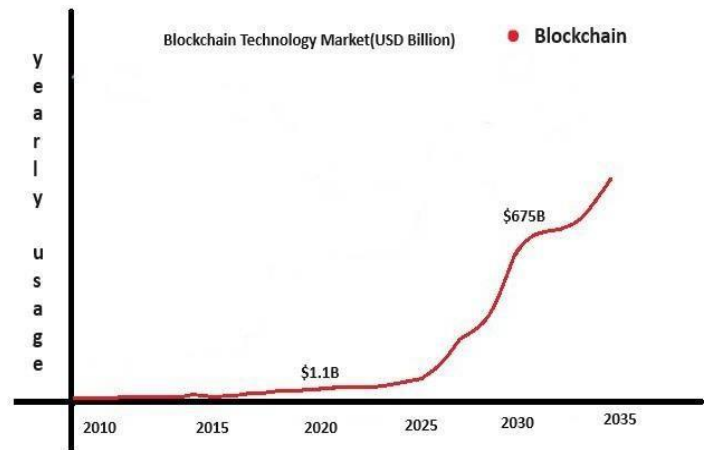


Fig.1 Blockchain technology market (USD Billion)

According to the graph, the usage in the transaction between blockchain and currency are described according to the yearly basis. As the graph shows the currency usage is getting stagnant due to the usage and the security reasons in the transactions.

Blockchain started to gain its presence in the transaction market as Satoshi Nakamoto used blockchain to create cryptocurrency in 2009. After the creation of crypto the blockchain came to forefront in the transaction market and is gaining presence continuously.

#### Web3:

Blockchain technology is revolutionizing crowdfunding by offering decentralized and transparent platforms that enhance trust and efficiency. At the heart of blockchain-enabled crowdfunding is the utilization of smart contracts, which are self-executing contracts with predefined conditions coded into them. These smart contracts automate the collection and distribution of funds, eliminating the need for intermediaries like traditional crowdfunding platforms or banks. By removing intermediaries, blockchain-based

crowdfunding reduces costs and increases transparency, as contributors can directly track how their funds are being used.

Web3, powered by blockchain technology, is transforming crowdfunding by offering decentralized platforms that prioritize transparency, security, and inclusivity. In the context of crowdfunding, Web3 utilizes blockchain's key features, such as smart contracts and decentralized networks, to revolutionize how fundraising campaigns are conducted and managed. Web3 crowdfunding platforms leverage smart contracts, which are self-executing contracts with predefined conditions written in code.

### III. Working Description:

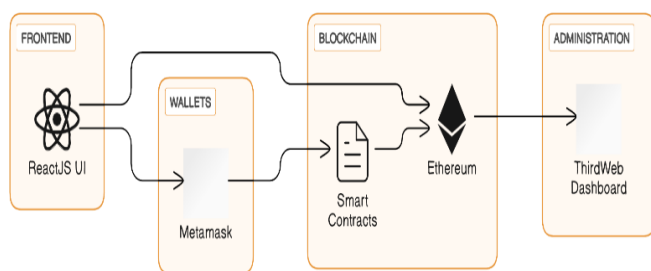


Fig.2 Workflow

This flowchart shows us Blockchain crowdfunding platform architecture contains frontend as interface, wallets as MetaMask, Blockchain using smart contracts and Ethereum and administration using third web framework for dashboard.

As the campaign created, the interface displays the data about the cause and the details about the campaign and its Id. The user get into it by login in the MetaMask and connecting through the test nets. Then the user can select to donate to the campaign by entering the value of the Ethereum present in the wallet of MetaMask.

Results:

#### • New Campaign:

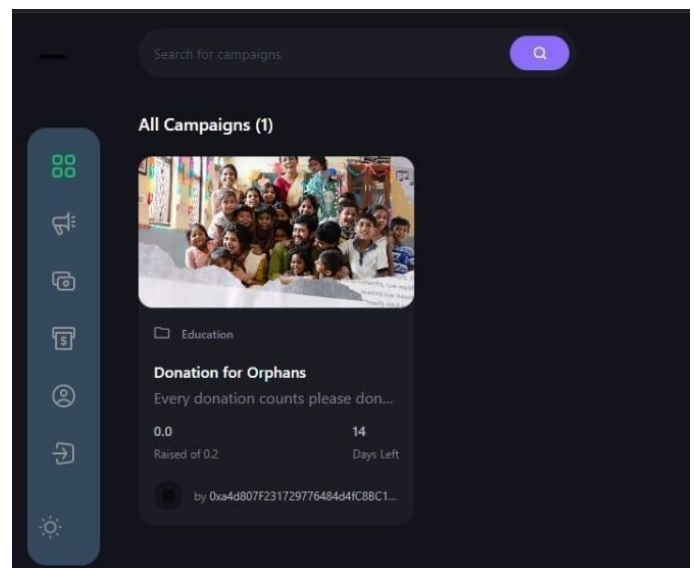


Fig.3 Campaign section

A campaign can be created by the applicant who want to set a campaign by adding details about the Donation and the cause the creator want to set. The owner of the campaign has to set the goal of the donations, time period for assign the campaign for a particular period of time and description about the campaign.

#### • Description:

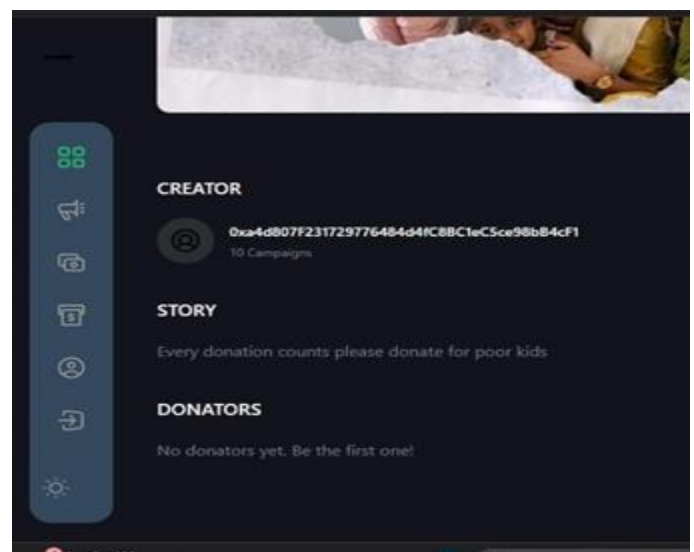


Fig.4 Campaign Description

After the creation of a campaign the details, story and the motive of the campaign will be displayed in the campaign section. The unique Id will be generated by the system to keep a campaign linked to the particular campaign.

• Donation:

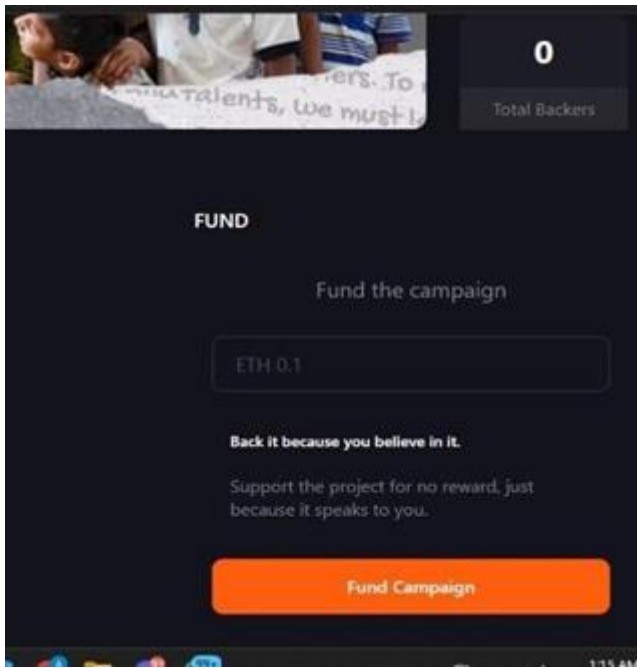


Fig.5 Donation section

Funds are donated through the Fund section of the campaign by entering the amount the donator wants to donate to the campaign running for the cause mention in the their description. The amount transacts in the cryptocurrency as we used blockchain technology to build it.

• Campaign records:

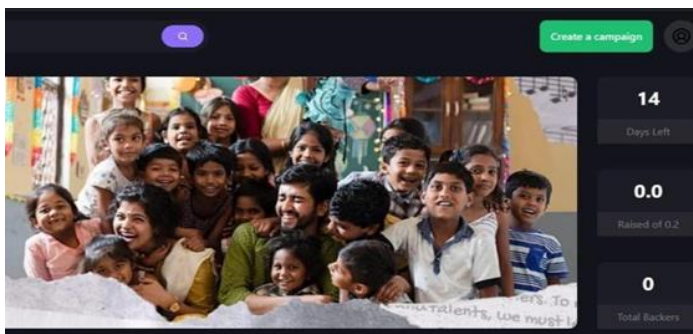


Fig.6 Records

The Records of the campaign are displayed on the screen in the Campaign section about the goal remaining, time remaining, record of the people donated in the campaign and all the data can be track from here.

Future Scope:

The future scope of the NGO Fundraiser System is brimming with opportunities for expansion, enhancement, and impact. Integration with More Blockchains: Extend compatibility to multiple blockchain platforms, allowing a broader user base. Implement advanced data analytics to provide NGOs with actionable insights into donor behavior and campaign performance. Create an ecosystem where NGO tokens can be traded or used for various purposes, incentivizing participation.

Enhance cross-border donation capabilities by exploring partnerships with global payment platforms and cryptocurrency exchanges. Develop a user-friendly mobile application for convenient access, ensuring that the system caters to the increasing mobile user base. Create customizable smart contract templates to suit the diverse needs of different NGOs and fundraising campaigns.

#### IV. Conclusion

In conclusion, this review paper delves into the transformative potential of blockchain technology in the realm of crowdfunding. Drawing insights from a comprehensive analysis of existing research papers, the review highlights the multifaceted advantages of adopting blockchain, such as enhanced transparency, security, and global accessibility. The literature review presented an overview of various blockchain-based crowdfunding platforms, emphasizing their strengths and limitations. Methodologies employed in these studies were explored to understand the

approaches used in investigating the impact of blockchain on crowdfunding. The proposed methods and system architectures showcased the innovative applications of blockchain in creating decentralized and secure crowdfunding ecosystems. Despite the evident advantages, challenges such as technical complexity and market volatility were discussed. The paper concludes by pointing towards future directions, including regulatory considerations, integration with emerging technologies, and the evolving landscape of blockchain-based crowdfunding. As the field continues to evolve, this review offers a comprehensive understanding of the current state and sets the stage for future exploration and innovation in blockchain-enabled crowdfunding.

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