JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

# Blockchain-Powered Crowdfunding

**[1]Rohan J Tilwani, [2]Eshwar K U, [3]Ms. Sindhu N**

[1]Undergraduate Student, [2]Undergraduate Student, [3]Assistant Professor
[1]Department of Information Science and Engineering,
[1]BNM Institute of Technology, Bangalore, India

***Abstract :*** Crowdfunding is a widely used financing method in many fields. However, most of the spending is baseless and fraudulent, leading to a lack of transparency and trust from investors. On the other hand, Blockchain technology provides a decentralized and secure system for the masses. This article presents a comprehensive review of financial applications using Blockchain, highlighting the advantages and challenges of this approach. This article discusses the Blockchain-based crowdfunding model, which is a form of donation-based crowdfunding, and examines the impact of blockchain on this model. The proposed model offers a Blockchain-based crowdfunding application that uses smart contracts to maintain security and transparency. Additionally, this article reviews existing Blockchain-based crowdfunding platforms and evaluates their features and limitations. In addition, the document highlights key issues and challenges with blockchain-based crowdfunding, such as compliance, scalability, and security. Finally, the article concludes by identifying future research directions in the field of blockchain spending and proposing solutions to the challenges associated with this approach.

***IndexTerms*** **- Smart Contracts, Campaign, Blockchain, Solidity, Transaction, SepoliaETH.**

## I. INTRODUCTION

Crowdfunding is a popular way to raise funds for a variety of projects, businesses, and relationships. It involves asking for small donations from many people to fund a particular program. However, traditional joint ventures often have some limitations, including lack of transparency, high costs, and integration that leads to a lack of investor confidence. On the other hand, blockchain technology provides a distributed and secure system for a large number of people who can solve these limitations.

Crowdfunding has received a lot of attention in recent years, especially with the rise of internet platforms that allow people to connect with potential investors. Crowdfunding is used to fund many projects such as creative work, social media and start-ups. Crowdfunding is broadly divided into four models: donations, awards, loans, and capital. Each model has its advantages and disadvantages, and the choice of model depends on the type of project and the objectives of the competition. Despite the popularity of crowdfunding, traditional crowdfunding platforms have some limitations. Firstly, these platforms are often controlled by several entities, resulting in a lack of transparency and trust among investors. Second, there are always users who use multiple platforms to pay high fees, which can reduce the amount of money available for a project. Finally, traditional crowdfunding platforms are prone to scams, which can lead to losses for investors.

Blockchain is a distributed technology that provides a transparent and immutable record of transactions, making it the perfect solution for the crowd. By leveraging Blockchain, crowdfunding platforms can provide investors with greater transparency, lower transaction costs, and greater security. Blockchain could also lead to new forms of crowdfunding, such as equity crowdfunding, where investors can acquire a stake in the company in exchange for their participation. This article provides a comprehensive review of current research on financial aid using blockchain. This article aims to analyze the potential benefits and challenges of blockchain-based crowdfunding and evaluate existing Blockchain-based crowdfunding platforms. The report also presents a financial aid model using Blockchain that provides transparency through smart contracts.

The rest of the paper is organized as follows. Section II provides related work of crowdfunding and its various models. Section III discusses the methodology. Section IV reviews the schematic diagram and the flowchart. Section V highlights the algorithm. Section VI highlights the results and discussion. Section VII and VIII concludes the paper by identifying future scope in the field of crowdfunding using blockchain.

## II. RELATED WORK

The main purpose of data analysis is to analyze the project details, to identify the vulnerabilities in the existing system and to make suggestions on how to solve the problems.

[1] In this process, traditional crowdfunding is compared to Blockchain based fundraising. The key requirements for crowdfunding are calculated and compared with each other to show the strengths and weaknesses of each crowdfunding process. Some of the achievements include the characteristics of the company, the partner team, the passion of the founder, the creation of the event. Despite the benefits of traditional crowdfunding, discussion of the respective project and competition shows that Blockchain-based crowdfunding is more beneficial because it is flexible. Effective features include endless features.

[2] The results of this article illustrate different strategies in crowded, all-or-nothing (AON), all-separated (KIA), general purpose (SGS) techniques. The scheduling process shows users donating to pre-existing fundraising plans, and transactions are secured with

the help of smart contracts. The diagram shows the business process and how it is stored in blocks. The proposed system only pays grants to existing fundraisers and does not allow users to create their own fundraisers. Because it works on the Keep-It-All program, money will be returned according to the fundraising policy if the goals are not met.

[3] The proposed model focuses on transparent and secure crowdfunding using blockchain. By asking for approval standards, transparency is created so that fundraisers can monitor the use of funds, thereby increasing trust. The proposed system shows that it is a security where money is not sent directly to the fund manager, but is managed by smart contracts. The diagram shows the planning process. The proposed system does not offer a withdrawal option and does not provide a right to return if the campaign's goals are not met.

[4] This offer provides a donation-based public service for activities and relationships that businesses can benefit from. The planning process ensures that tasks are completed within the scheduled time. It does this by applying Ethereum Smart Contact to crowd sourced sites to execute the contract. Remittance will only be made in a stable currency. Because the proposed system uses a single currency, transactional fees (gas fees) is higher than expected. [5] Blockchain-based platform that connects social networks with a large number of users. It was created as DAO (Decentralized Autonomous Organization). It recognizes the important role of donors in enabling them to generate profits while supporting artists and projects. There is no right in the middle of the crowd and LIKOIN(LikeStarter) High conversion rate.

[6] This article presents a methodology for decentralized crowd sourcing that addresses the scalability issue by minimizing the overall cost base. They named the process "NF-crowd", which stands for NearlyFree Crowd Platform. The results of this process are powerful and guaranteed. They use CC-OCR (crowd source campaign with open community review). The project uses advanced cryptographic (check blocks for various signatures and security purposes) tools and "off-chain aggregation", which can use many resources and computing power of the people who use the machine.

[7] This document describes an approach with two contracts, one that stores all objects and the other that manages operations for each object. In a crowdsourced platform, the main organizations are task managers, partners, vendors, smart contracts, spend requests, and voting. If the goal is met, the cryptocurrency will not be credited back to the participant's account. There is also no lower limit for activities running in many applications.

[8] This article aims to analyze the interaction of the four main events that led to this development, namely crowdfunding, blockchain technology, cryptocurrencies and initial coin offerings (ICOs). Blockchain, a parallel technology development, has created chaos in many areas, including financial markets. This article analyzes all the cases, but they do not follow the facts that show that cryptocurrencies are still not accepted by stores in India and many other countries. Not all cases are considered, only Hyperledger. And just use social media platforms to gather information.

## III. METHODOLOGY

The methodology used in this paper is intended to provide an application for users to donate funds to the campaign of their choice and also allows users to create their own campaigns provided they have a walletID. For the sake of testing we used seopliaETH to conduct transactions and check the working of our method. We used smart contract in our project to ensure complete transparency and also provide an option for the campaign manager to withdraw funds from the campaign for any cause.

All the exchange points of interest from funder conclusion as well as finance seeker conclusion will be recorded within the form of blocks in blockchain. Whereas all the other crowdfunding stages are utilizing "all or nothing" demonstrate, instead tis entry are employments "keep it all" show for new businesses. All the support that was raised amid a timestamp is all yours and require not to be returned in the event that it doesn't meet the target support.

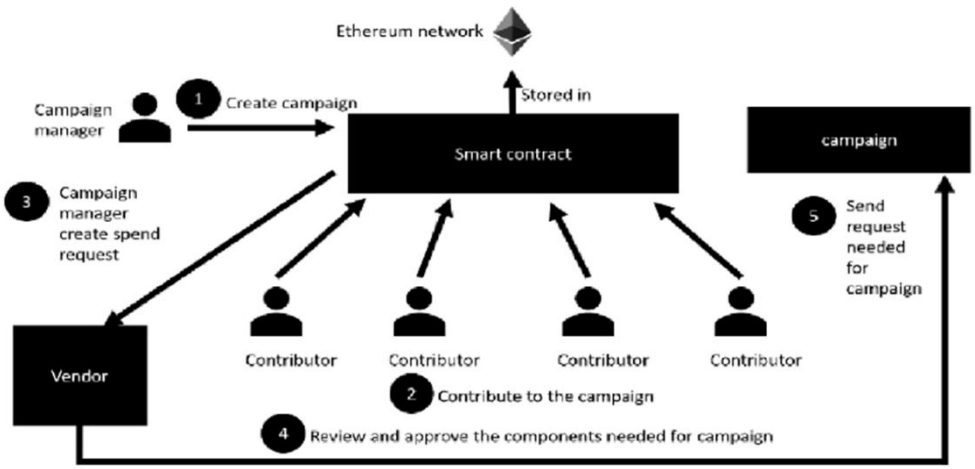


Fig. 1. Methodology of the model

Figure 1 shows the methodology of the proposed model where in a user who creates the campaign becomes the campaign manager and if any preexisting campaigns are available users can contribute to the available campaigns. All the transactions are secure and transparent with the help of smart contract. Since users use their wallets to contribute their identity is known only to them and them alone which provides a sense of security and also eliminates any intermediary that are present in conventional crowdfunding.

## IV. SCHEMATIC DIAGRAM AND FLOWCHART

Fig. 2. Architectural Design

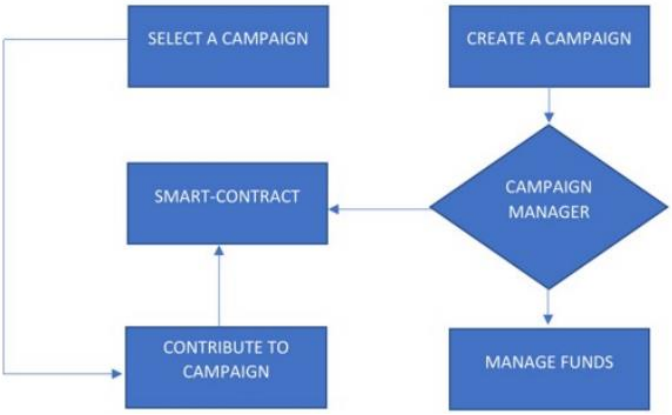


Figure 2 shows the architectural model of the proposed model. It is broken down into two different scenarios. First, when a campaign is already created and the user can donate or approve for refunds when the manager requests for it. Second, is when the user creates a new campaign in order to raise funds for a cause like flood relief etc.

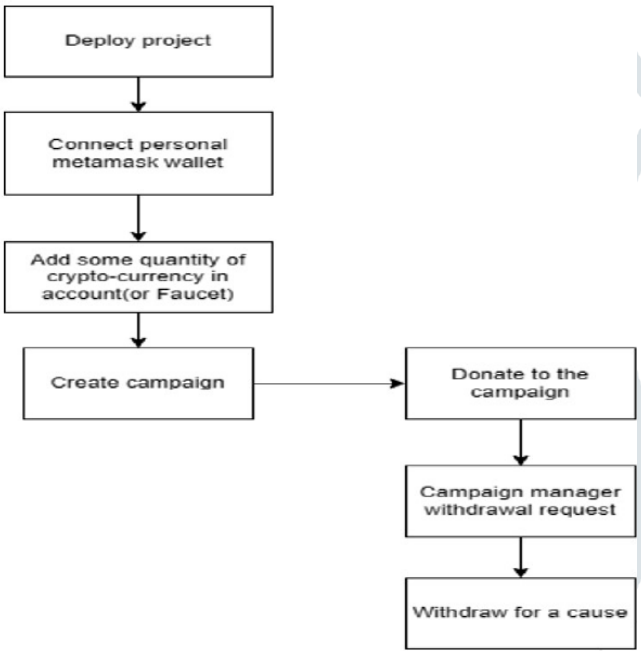


Fig. 3. Data Flow Diagram

Figure 3 shows the dataflow diagram for the proposed system which states to deploy the project first , and to connect to the users metamask and make sure some form of crypto currency is present in the wallet in order to create a campaign and once the campaign is created other users can contribute to the campaign using the same form of crypto currency.

## V. ALGORITHM

Smart contracts are self-signed contracts where the agreement between two parties is written directly into the line of code. Smart-contracts are stored on a blockchain and are executed automatically when certain conditions are met. Smart-contracts can be used in crowdfunding to automate the process of fundraising and distribution of funds. Smart-contracts provide a powerful tool for crowdfunding using blockchain technology. They enable the crowdfunding process to be more transparent, efficient, secure, and decentralized, making it easier for entrepreneurs to access funding and for investors to participate in the crowdfunding process. Smart-contracts can complete the process of raising funds from investors and distributing it to project developers. This can make the crowdfunding process faster and more efficient, reducing the time it takes for campaigners to raise funds. Smart contracts enable cross-border financial transactions as they are stored in a distributed Blockchain network. This makes it easy for project developers to receive funding from international investors without the need for intermediaries.

## VI. RESULTS AND DISCUSSION

The proposed model's working is demonstrated in figures 4,5 and 6. All the criteria for secured crowdfunding process are satisfied. It is secure in terms of identity, authenticity and fraud-less. The donors have their say in what their funds will be used for in the future. And no middlemen are included in the process.

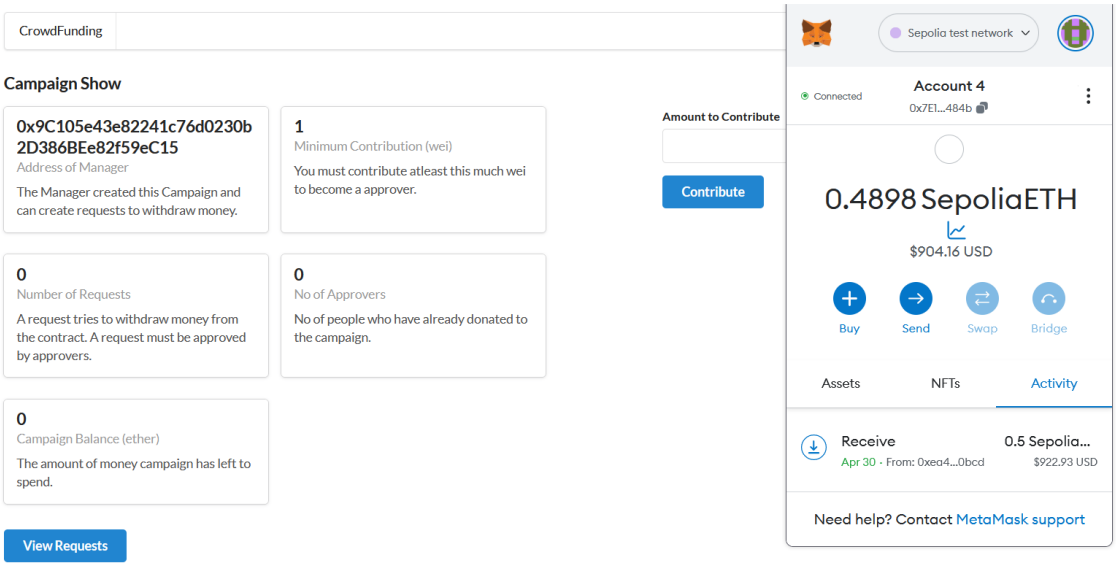


Fig. 4. Campaign Creation

Figure 4 shows the campaign created by the user the manager address is used later to create a request in case of withdrawal of funds. The campaign while creation asks for a minimum amount of wei which is the smallest denomination of ether. Any donor must contribute the required amount of wei in order to be able to have a say in the withdrawal process. New requests can be created by the campaign manager for any cause to withdraw the funds. The right-hand side of the figure shows that the user has connected to metamask and has sepoliaETH in their account. Hence, all the donors must contribute using the same crypto currency.

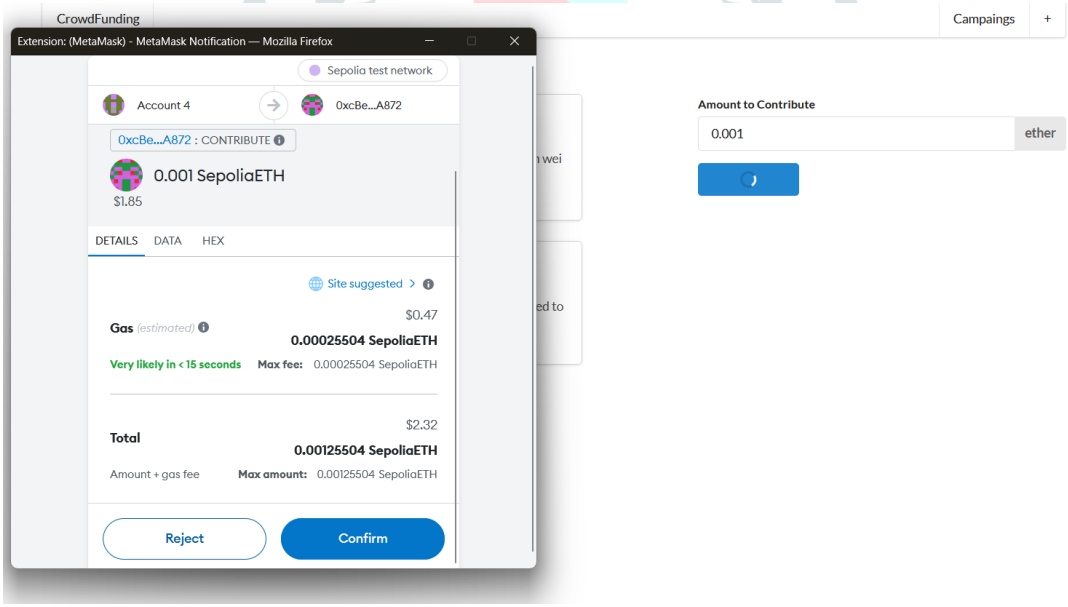


Fig. 5. Donating Funds

Figure 5 shows the transaction taking place where in a donor is contributing funds to the campaign. The transaction is completed on metamask and the gas fees is calculated according to the smart contract set in place for the campaign and secure transaction takes place.

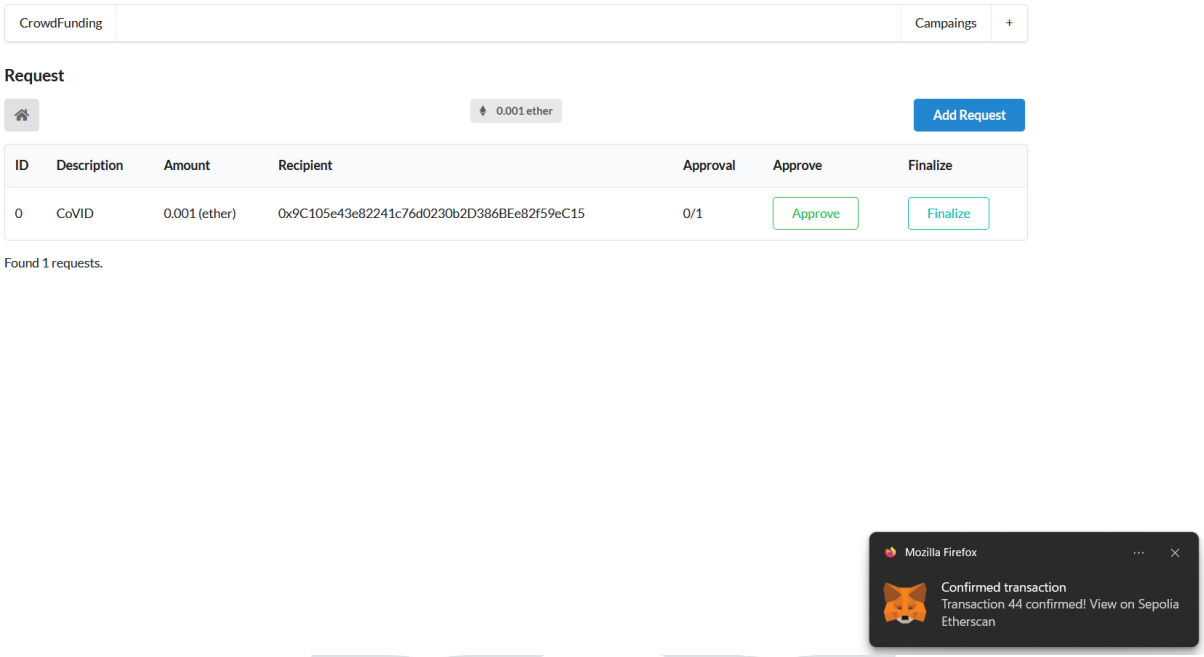


Fig. 6. Request for Withdrawal of Funds

Figure 6 shows the request that is created in this case for COVID asking for the donors to approve for withdrawal of funds from the campaign. Funds can only be withdrawn after the approval of donors and this is ensured by the smart contract which shows that the donors have a say in what their funds are being used for and they have the final say whether to release their funds for the cause or not. The proposed model is an all or nothing model which returns the left-over funds to the donors once the campaign needs are met and the funds are no longer needed. If the campaign fails to reach its funding goal or is cancelled, the contributed funds are refunded to the investors. Key performance indicators (KPIs) that can be used to evaluate the success of a crowdfunding project using blockchain include the amount of funds raised, number of contributors, campaign duration, refund rate, and transparency of the campaign. Overall, a well-executed crowdfunding project using blockchain can provide a secure and transparent platform for investors to support innovative and exciting new projects while minimizing the risk of fraud or mismanagement.

The decentralized and immutable nature of blockchain makes it a perfect stage for crowdfunding, because it disposes of the require for middle people and allows for the coordinate exchange of reserves between investors and fundraisers. This increments straightforwardness and diminishes the chance of extortion, as all exchanges are recorded on the blockchain record.

## VII. Conclusion

The proposed method offers a better way of raising funds through users when compared to conventional crowdfunding and blockchain based crowdfunding allows world wide transactions which is a limitation in conventional crowdfunding. To make novel and cutting-edge crowdfunding stages, blockchain innovation can be combined with advanced innovations like artificial intelligence and the Internet of Things. Future blockchain-based crowdfunding stages that capitalize on the use of these advances to supply customised and focused on venture openings may rise. Overall, this study adds to the expanding body of research on blockchain technology and crowdfunding and emphasises how blockchain technology has the ability to completely transform the crowdfunding industry. Additional study is required to examine the long-term effects of blockchain-based crowdfunding platforms and to create plans for dealing with their difficulties and restrictions.

## VIII. Future Scope

The absence of regulatory frameworks is one of the main obstacles for blockchain-based crowdfunding. To safeguard investors and make sure that the crowdfunding process is fair and transparent, there will be a need for clear and uniform laws as the usage of blockchain technology in crowdfunding increases. Stablecoins, which are cryptocurrencies pegged to a stable asset such as the US dollar, can be used in crowdfunding campaigns to reduce the volatility associated with traditional cryptocurrencies.

## References

**[1]** Felix Hartmann, Gloria Grottolo, Xiaofeng Wang, Maria Ilaria Lunesu, “Alternative Fundraising: Success Factors for Blockchain-Based vs. Conventional Crowdfunding”, Hangzhou, China, 14 March 2019.

**[2]** Firmansyah Ashari, Tetuko Catonsukmoro, Wilyu Mahendra Bad, Sfenranto, Gunawan Wang, “Smart Contract and Blockchain for Crowdfunding Platform”.

**[3]** Harsh Khatter, Hritik Chauhan, Ishan Trivedi, Jatin Agarwal, “Secure and transparent crowdfunding using blockchain”.

**[4]** Moiyad Kaydawala, Abhinav Pandey, Parnika Roy, Himanshu Jaroli, Bindu Garg, “Supportroops: Crowdfunding Using Blockchain”.

**[5]** Mirko Zichichi, Michele Contu, Stefano Ferretti, Gabriele D’Angelo, “LikeStarter: a Smart-contract based Social DAO for Crowdfunding”.

**[6]** Chao Li, Balaji Palanisamy, Runhua Xu, Jian Wang, Jiqiang Liu “NF-Crowd: Nearly-free Blockchain-based Crowdsourcing” IEEE Xplore September 2020.

**[7]** Nikhil Yadav, Sarasvathi V, “Venturing Crowdfunding using Smart Contracts in Blockchain”.

**[8]** Claire Ingram Bogusz, Christofer Laurell, Christian Sandström "Tracking the Digital Evolution of Entrepreneurial Finance: The Interplay Between Crowdfunding, Blockchain Technologies, Cryptocurrencies, and Initial Coin Offerings" from IEE Xplore November 2020.

**[9]** Dr.S.Saranya,Sai Phanindra Muvvala,Vitul Chauhan,Raja Satwik, "Crowdfunding Charity Platform Using Blockchain".