iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 13 **Issue:** II **Month of publication:** February 2025

DOI: https://doi.org/10.22214/ijraset.2025.66976

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue II Feb 2025- Available at www.ijraset.com

Blockchain Based Crowdfunding for Education

Muzahidul Islam[1], Kaushal Kumar[2], Nalin Trivedi[3], Md. Naved Nayyar[4], Sur Singh Rawat[5]
Department of Computer Science and Engineering, JSSATE, Noida, Uttar Pradesh, India

Abstract: ***This paper presents method for transforming education funding through a blockchain-powered crowdfunding platform. This platform aims to empower students, educators, and educational institutions. Our goal is to create a decentralized environment where creative educational projects can receive financial support, providing assistance to students facing financial barriers and enabling small schools to request funding for infrastructure and program improvements. In response to the increasing demand for transparency and accountability in crowdfunding, our platform encourages collaboration among developers to enhance features and functionalities, all while offering a user-friendly interface through Web3 technology. The central focus is on fostering community involvement and attracting backing for educational initiatives, while also allowing the platform to evolve and scale efficiently with the benefits of Polygon's scalability.***
Keywords: Blockchain, Decentralized, Crowdfunding, Polygon, Web3, Smart Contract.

I. INTRODUCTION

In today's world, many students across the globe encounter significant obstacles in pursuing higher education due to insufficient financial resources. As the cost of education continues to rise, the dream of attending college or university becomes increasingly unattainable for many young individuals, who struggle to cover tuition fees, textbooks, and living expenses. This financial barrier not only hinders academic aspirations but also limits opportunities for personal and professional development.

To overcome this challenge, a blockchain-based crowdfunding platform has been introduced, specifically designed to assist students. This novel solution utilizes blockchain and smart contracts to address financial limitations. Through the platform, students can participate in crowdfunding campaigns to secure funds for their education, enabling them to fulfill their higher education aspirations.

The proposed blockchain technology operates as a decentralized, distributed digital ledger which is used to record transactions across a network of computers connected to the internet. This decentralized structure makes it difficult to alter or manipulate the data stored in the ledger. The crowdfunding model involves raising funds by collecting small contributions from a large number of people via online platforms and social media, offering a powerful mechanism to support educational projects.

Unlike traditional crowdfunding models that rely on intermediaries such as banks, financial institutions, payment gateways, and crowdfunding platforms, our approach minimizes the need for third parties. By eliminating these intermediaries, we aim to reduce fundraising expenses and give project managers more control over their campaigns. This streamlined process increases the efficiency and effectiveness of crowdfunding for education, making it a more accessible and impactful option for students in need.

With the adoption of blockchain technology, this approach can address these challenges by leveraging the key features of blockchain, such as security, decentralization, and transparency. Blockchain offers an immutable, decentralized ledger, ensuring safe and transparent transaction tracking without the need for intermediaries.

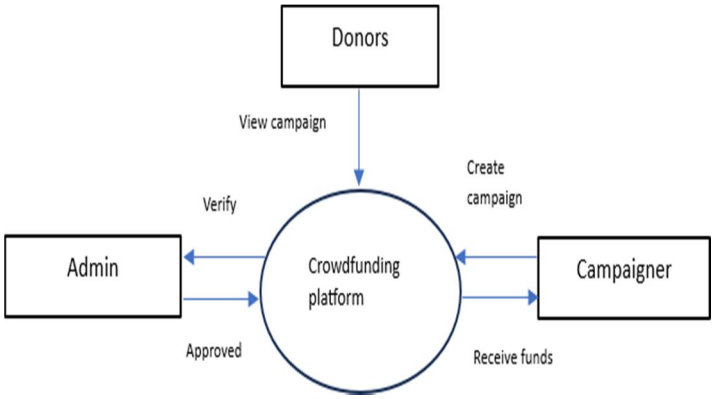


Fig 1: Crowdfunding

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue II Feb 2025- Available at www.ijraset.com

II. LITERATURE REVIEW

A. Literature Review

1) *Crowd-funding Platform Utilizing Blockchain (2022):* This research introduces a decentralized application on the Ethereum Blockchain to address the limitation of current crowdfunding platforms . It aims to store campaign details, donations, withdrawals, and funds on an open blockchain network. By utilizing a shared ledger, the application eliminates redundant transactions and improves transparency and security. All transactions will be immutable and irreversible.
2) *Utilizing Smart Contracts (Ethereum) in a Blockchain Crowdfunding System to Enhance Trust and Information Symmetry (2021):* The study explores the creation of a crowdfunding platform leveraging the Ethereum Blockchain, placing a strong emphasis on the use of smart contracts. Smart contracts automate the distribution of funds based on predefined conditions, ensuring that funds are released only when specific condition are satisfied. This reduces the risk of misappropriation of funds by project creators and boosts transparency in transactions.
3) *Charity Supervision Management System Based on Blockchain by Xin Fan(2022):*This research explores the design and application of blockchain technology to improve transparency and trust in charity operations. It discusses that all transactions are recorded on a tamper-proof ledger that is visible to stakeholders and decentralization removes the need for intermediaries, enabling donors to directly track how funds are used. Smart contracts automate the allocation and release of funds based on predetermined conditions
4) *Understanding Users Reaction to Blockchain Technology on the Online Fundraising Platform by Yaqi Zhou (2022):* The research aims to understand how users react to the implementation of blockchain technology on online fundraising platforms. The author conducts scenario simulation experiments to replicate real-world interactions on these platforms and evaluates the impact of blockchain on user trust, donation behavior, and engagement.
   Author by leveraging the transparency and security provided by blockchain's decentralized and immutable nature, online fundraising platforms can potentially increase donor participation and build greater confidence among contributors.
5) *Kickstarter and FB:* This research Integrates blockchain technology into platforms such as Kickstarter and Facebook Fundraisers could greatly improve transparency, security, and cost-effectiveness. For Kickstarter, blockchain could enhance fund tracking and reduce fees, while for Facebook, it could facilitate decentralized donations and offer greater assurance regarding the use of funds.

B. Survey of Existing Environment

1) *Understanding the Centerlization of the Environment:* Understanding the centralization of the environment in a crowdfunding platform, one of the most important and understandable aspects is the trust between the investors and the crowdfunding team members. Investors hope that their donations are used efficiently and are not subject to fraud. To develop trust, there is a concept of a centralized system.
2) *Study on charitable organization:* A study on the charitable organisation shows that many studies have explored the authenticity of charitable organizations. Many people suggest that charity organizations often operate under limited legal frameworks. In China, a man named Rui Xing stated that Chinese charities often provide insufficient financial disclosure when managing their obligations. Government oversight is necessary to regulate these kinds of organizations. The use of blockchain technology, such as the Ethereum platform, can help increase transparency and authenticity. Charities or donations based on Bitcoin blockchain technology can also enhance the authenticity of donations.

C. Challenging in the Current System

1) *Trust issues:* Trust issues are one of the most challenging aspects of crowdfunding. Before making a contribution, investors hesitate to donate due to concerns about fraud and the lack of transparency in the system. They worry that their money may not be used properly or that they could lose it entirely.
2) *Fraudulent Fundraising Efforts:* There are many ways fraud can occur, and while crowdfunding platforms are valuable sources of funding, they also carry the risk of fraud. Many scammers are ready to deceive investors by creating fraudulent websites or making fake calls. These scams not only affect investors but also damage the credibility of the crowdfunding platform.
3) *Lack of Transparency:* One of the most important aspects of crowdfunding is transparency, not only in crowdfunding but also in any kind of money transaction. In crowdfunding, there can often be a lack of clarity. The most challenging task is tracing the transaction process. Ensuring transparency and providing clear documentation of fund flows are essential for building trust and credibility.

4) *Centralized Control:* Another issue is the centralized control over the data. This controlling authority could misuse or alter the data, which could then be used in an unauthorized manner. There is also the risk of data breaches during an attack, which could lead to the loss of investment data.

III. METHODOLOGY

1) *Generation of Campaign:* Basic attributes of the campaign such as it's title, photo, description and fundraising target must be provided by the member with its e-wallet connected to our application in order to successfully generate it. To write contract code for this, solidity is used and also with the help of this programming language the contract is deployed to blockchain. A very minimal amount Is required to validate the transaction so campaign can be created easily by pressing "create campaign". Following this it will be generated with the corresponding minimal amount. Just after some time with completion of transaction, contract address is stored within a part of blockchain known as block is added to it.
2) *Benefactors and Validators:* Someone who wants to fund campaigns have to browse and select the campaigns to fund but only after linking their e-wallet. Chances of fraud is minimized as funds are directly transferred to campaign address instead of the campaign creator making it more efficient and reliable with providing an advanced facility of becoming a validator if the donation crosses the limit of minimum amount to donate.
3) *Fund Extraction:* Benefactors who made a significant contribution can either validate or deny requests. More than or equal to half of the validators must validate the request in order to withdraw the fund. This above system ensures that funds are utilized by mutual agreement of the investors. If approved funds are transferred to the designated address. All the above processes are transparent and ensure efficiency as very secure technology is used while creating it ,ensuring a building of platform which is reliable, efficient and trustworthy that solve basic problems of traditional funding.

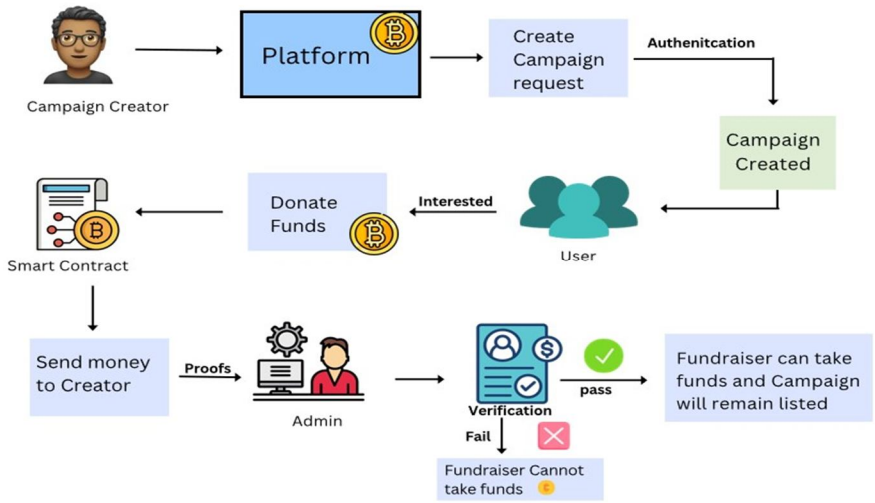


Fig 2: Proposed Methodology

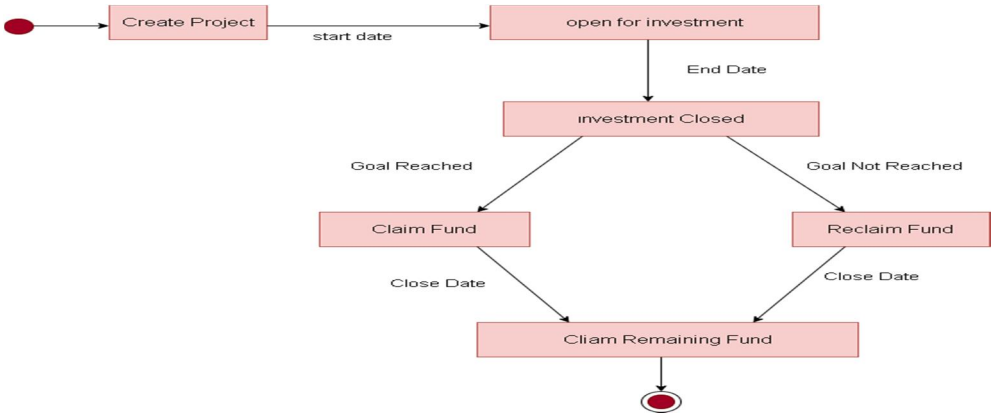


Fig 3: Activity Diagram

IV. CONCLUSION

Crowdfunding has emerged as a transformative technology that enables new platforms to assist startups and organizations in raising funds through traditional methods. Our primary objective is to support talented students who aspire to pursue higher education but are hindered by financial limitations. This platform provides an opportunity
for underprivileged students to raise funds for their educational endeavors.

On the platform, fundraisers will present their project proposals along with relevant documentation, ensuring transparency and accessibility for all team members. Funder who choose to support a project essentially purchase shares in it, offering their financial backing. By integrating blockchain technology into the crowdfunding process, we reduce the reliance on paperwork, while ensuring that all transactions are securely recorded, which enhances both trust and accountability in the projects.

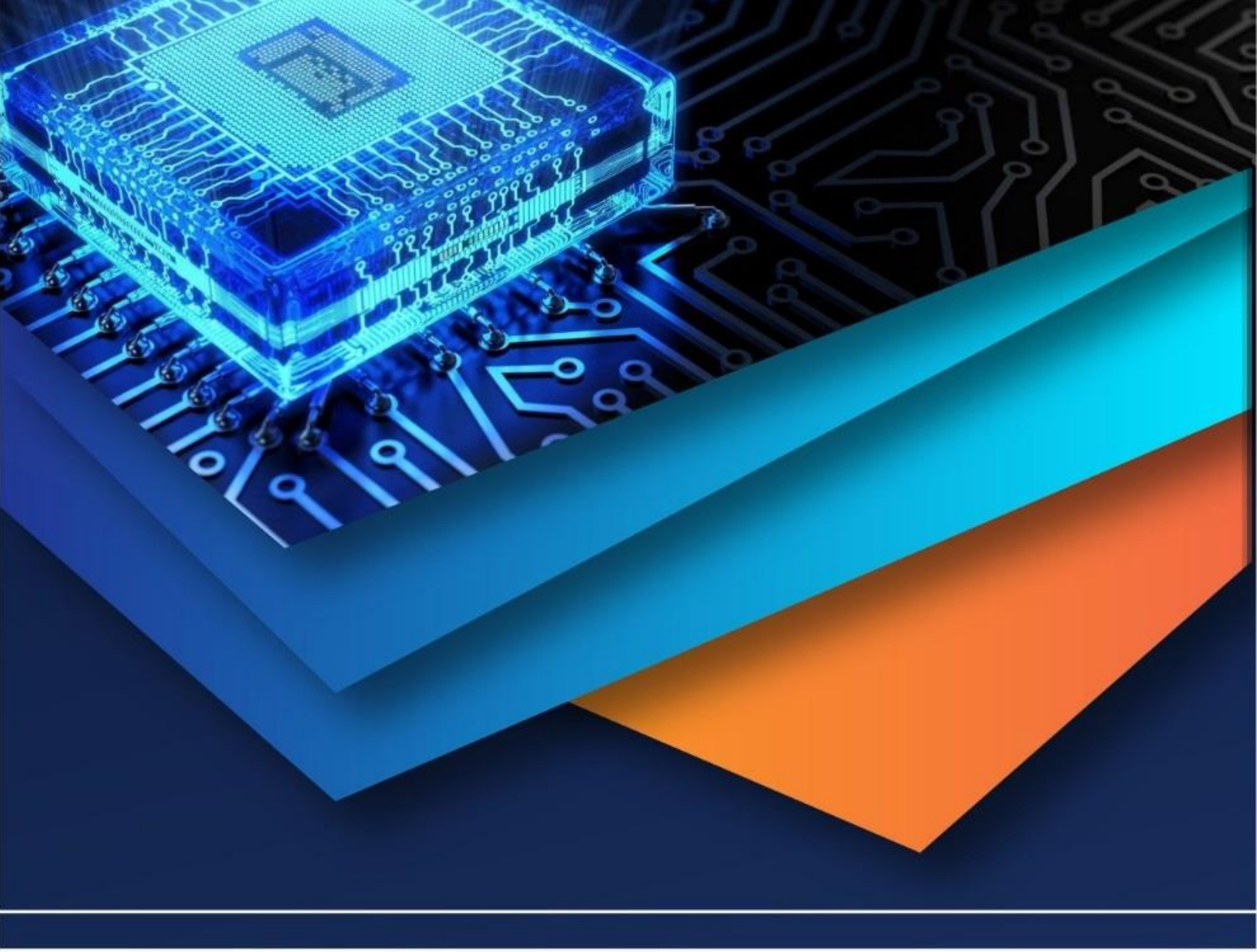
Moreover, blockchain guarantees the security and accessibility of documents, while allowing funder to track the project's progress on a daily basis. In the future, more advanced smart contracts could be developed to address a variety of crowdfunding models, including equity crowdfunding, debt crowdfunding, and reward-based crowdfunding.

V. ACKNOWLEDGEMENT

We are deeply grateful to Dr. Amarjeet Singh, Principal, and Dr. Kakoli Banerjee, Head of the Department of CSE at JSS Academy of Technical Education, Noida, for facilitating our research endeavors through the project “Blockchain-based Crowdfunding for Education.” The visionary guidance and steadfast support of our mentor, Dr. Sur Singh Rawat, Assistant Professor, were important in shaping the project’s outcome. Additionally, we appreciate the invaluable contributions of our peers and friends, whose collaboration was instrumental in the project’s successful completion.

REFERENCES

[1] NFT based Fundraising System for Preserving Cultural Heritage: Heirloom,” 6th International Conference on Computer Science and Engineering (UBMK), 2021, Emre Ertürk, Murat Doğan, Ümit Kadiroğlu, Enis Karaarslan.
[2] Xin Fan, “Charity Supervision Management System Based on Blockchain”, 2nd International Conference on Computer Science and Management Technology (ICCSMT), 2022.
[3] Yaqi Zhou, “Understanding Users' Reaction to Blockchain Technology on the Online Fundraising Platform:—Evidence from Scenario Simulation Experiments,” International Conference on Computer Information Science and Artificial Intelligence (CISAI), 2022.
[4] Blockchain-Based Crowdfunding Application IEEE, https://ieeexplore.ieee.org/document/ 9640888, 2021 Fifth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), 11-13 November 2021, 10.1109/I-SMAC52330.2021.9640888 at Palladam, India.
[5] Blockchain-Based Crowdfunding: A Trust Building Model IEEE, https://ieeexplore.ieee. org/document/9671003, 2021 International Conference on Artificial Intelligence and Machine Vision (AIMV), 24-26 September 2021, 10.1109/RTEICT52294.2021.9573956 at Gandhinagar, India.
[6] Blockchain Integrated Crowdfunding Platform for Enhanced Secure Transactions IEEE, https://ieeexplore.ieee.org/document/9633380, 2021 4th International Conference on Recent Developments in Control, Automation & Power Engineering (RDCAPE), 07-08 October 2021, 10.1109/RDCAPE52977.2021.9633380 at Noida, India.
[7] A Secured Distributed Ledger Based Fundraising Framework Using Smart Contracts,” IEEE 4th International Conference on Computing, Power, and Communication Technologies (GUCON), 2021, Darshan M, S.R Raswanth, Sundeep V V S Akella, Priyanka Kumar.
[8] Kshetri, N., Voas, J., & Bandyopadhyay, S. (2019). Blockchain Enabled crowdfunding: A review and directions for future research. Journal of Business Research, 98, 365-380.
[9] Medeiros, R. C., and Santos, J. M. (2019). Development of a decentralised crowdfunding platform using blockchain technology. Presented at the 2019 14th Iberian Conference on Information Systems and Technologies (CISTI), pp. 1-6. IEEE.
[10] Tsygankov, D., Illia, M., & Feinberg, A. (2019). Crowdfunding with blockchain. In Blockchain Economics (pp. 91-104). Springer, Cham.
[11] Yao, J., Huang, Q., Liu, X., Wang, J., & Liao, X. (2020). A Smart Contract-Based Crowdfunding Platform Using Blockchain. Journal of Computational Science, 43, 101206.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY