

Pioneering the Future of Crowdfunding with Blockchain

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Abstract—Crowdfunding has identified a popularized way to collect money for different projects. But sometimes, people mistrust it whereas there are majority of cases of dishonesty happening. This paper aspects on how we can use blockchain technology to make crowdfunding safer. Blockchain is like a network of computers that save records of transactions. Because of this, we can be positive that the money is used correctly. By considering how crowdfunding works now and inspecting how blockchain can help, this paper suggests conceptions to make crowdfunding platforms more secure. If we use Blockchain, we can make people's confidence in crowdfunding longer and get more contributions for new and creative projects.

Index Terms— Decentralised Applications (DApps), smart contracts, blockchain, and crowdfunding.

I. INTRODUCTION

Crowdfunding is helping people on the internet by giving money. It's effortless as you can use the internet to make a payment and it's changed how people raise funds. Crowdfunding is getting more leading especially for healthcare, especially in that places where not all of the people have health insurance. Revolution by the Public Health Foundation of India figured out that in 2023, about 65 million Indians were impoverished because they had to pay for medical treatment. In India, huge crowdfunding websites gathered over 400 crores for healthcare that year, showing they're growing fast. But infrequently, people mistrust crowdfunding because of scams. The FBI Directly warned people to be careful during the COVID-19 pandemic cause there were more fraud charity schemes. For this reason, we need to use blockchain in crowdfunding to make an effortless and harmless healthier to see where the money goes.

Many non-profit Organizations work to persevere to raise funds, specifically during the COVID-19 pandemic. However, enhancing confidence with donors can be challenging. Some non-profits are using technology to make donating easier. This exposes that besides trust, technology also plays a big role in Fundraising.

[1][2] In this research, the author wants to evaluate how Fundraising Organizations work and how blockchain technology can encourage building trust with donors. Blockchain technology can be a solution to increase donor trust, which can lead to extra funds. Smart contract technology can also make it untroubled for Organizations to evaluate funds if necessary. Being before examine shows that blockchain technology has been successful in industries like telecommunications and medicine

[3] Blockchain technology has attracted a lot of attention nowadays. It has opened up new ways to use electronic voting methods to express concerns about distrust, authentication, anonymity, and centralized control, making the voting process more trustworthy.

II. RELATED WORK

Lu Qinghua Lu et al. [4] uncovered the development of an electronic "ePhyto" certificate system by the United Nations (UN). This system, overseen by the UN, enables the exchange of ePhyto certificates through the national plant protection organizations (NPPOs) of exporting and importing countries. By establishing a defensive communication channel through pre-registered NPPOs, the UN system ensures the authenticity and validity of ePhyto certificates. However, industry stakeholders outside the UN system shortage the means to verify the authenticity or status of these certificates.

Crowdfunding and Blockchain in the Era of Disruption 4.0: influence on Financial Technology Development, as presented by Totok Mulyono et al. [5], highlights the distinctive risks associated with these technologies. Managers must skilfully identify and manage risks such as technical failures, regulatory compliance, and financial uncertainties. Integration of Crowdfunding and Blockchain necessitates organizational adjustments, including procedural enhancements, including procedural enhancements, workforce training, and technology infrastructure upgrades. Amongst the disruption 4.0 era, financial technologies like crowdfunding and Blockchain redefine fundraising norms, offering streamlined access to funds while dismantling traditional barriers. Consequently, they emerge as pivotal drivers in the evolution of financial technology, presenting both opportunities and challenges requiring prudent navigation from industry stakeholders.

Tobias Guggenberger, Kickstarting blockchain: designing blockchain-based tokens for equity crowdfunding is proposed by et al. [6] Unveiling a pioneering blockchain prototype addressing equity crowdfunding and ICO challenges. Their research yielded insights applicable beyond crowdfunding, presenting a comprehensive equity token model and guiding design principles. Practical implications include source code availability for early-stage companies and enhanced liquidity through token ecosystems. Despite limitations, such as Ethereum blockchain reference and design validation, equity tokens are poised to revolutionize financial infrastructures and streamline funding processes, signalling a transformative shift in the blockchain ecosystem.

According to Muhammad Shoaib Farooq et al. [7], this article employs a survey-based approach to analyze blockchain-acquainted Site Reliability Engineering (SRE) practices. It delineates SRE practices during blockchain engineering and proposes an SRE framework for blockchain infrastructure. The significance of blockchain-acquainted SRE is underscored by identifying and defining problematic aspects of contemporary SRE practices, such as RN, RV, and RT. Through feature analysis, blockchain's suitability for SRE frameworks is demonstrated. The article classifies SRE practices in blockchain development and proposes a generic SRE model on blockchain infrastructure, enhancing automation and addressing quality improvement factors. Implementation guidelines for this model are provided, and future research challenges and directions are outlined, offering insights for scholars and software developers. Future extensions may include implementing functional SRE frameworks on blockchain infrastructure using technologies like Ethereum or Hyperledger.

In 2023, Kwame Omono Asamoah et al. [8] proposed a blockchain-based crowdsourcing loan platform to address financial barriers hindering exceptional students' access to postsecondary education. By leveraging blockchain technology, the platform ensures transparent and verifiable monitoring of students and investors, thereby facilitating financial assistance for tertiary education. Anonymity and privacy are maintained through unique identifiers and cryptographic keys for users, while transactional details are securely transmitted via email and stored as file hashes on the blockchain. This decentralized approach guarantees data integrity and accessibility, distinguishing it from conventional crowdsourcing frameworks.

Mortgage et al. [9] articulate the potential hurdles and constraints associated with integrating blockchain technology into social business lending. They identify regulatory compliance, scalability issues, and the requisite technical acumen as primary challenges. Nevertheless, the authors advocate for the implementation of strategic measures, including regulatory frameworks, technological advancements, and enhanced user education, to mitigate these challenges effectively. The paper underscores blockchain's potential to foster a more inclusive and sustainable economy by empowering social businesses traditionally underserved by conventional financial systems. The proposed platform offers a novel avenue for individuals to invest in enterprises aligned with their ethical values, thereby championing social and environmental causes.

Five objectives are achieved by Xiaole Wan et al. [10].: Blockchain technology enhances the crowdfunding decision-making process in marine ranching. Through the examination of four models, the study elucidates the varying optimal outcomes influenced by different crowdfunding methods and the introduction of blockchain technology (BT). Consumer crowdfunding yields a higher value for supply chain members compared to pre-sale crowdfunding, with BT significantly augmenting their value. Despite potential losses for the marine ranching leading enterprise, the integration of BT elevates the overall value of the supply chain system. Furthermore, the study underscores the significance of product green attributes in determining the value of supply chain

participants, emphasizing the importance of increasing product sales volume for retailers and crowdfunding platforms to enhance economic value realization.

Vishakha Shelke et al. [11] note that Blockchain technology has garnered significant attention across various sectors, propelled by its association with Bitcoin. Acknowledged for its potential to revolutionize industries, Blockchain ensures democracy, security, transparency, and efficiency in processes. Despite being in its nascent stage, financial institutions are early adopters, leveraging Blockchain for faster transactions, cost-effective operations, and enhanced transparency. As data generation surges, efficient security management becomes imperative, driving enterprises to adopt Blockchain for significant cost savings. With its rapid evolution, Blockchain remains poised for continued growth, debunking traditional concerns like excessive transaction costs and internet fraud. The proposed system comprises six components, facilitating seamless fund-raising, investment, and consensus-based decision-making for enhanced transparency and efficiency.

Over the years, extensive research has evaluated and compared diverse blockchain models for constructing a robust crowdfunding solution, as advocated by Dr. Poornima G. Naik and Dr. Kavita S. Oza [12]. The collaborative funding and project management system detailed in this document aims to establish a transparent and efficient crowdfunding platform for both project creators and contributors. It encompasses features like project customization, easy contribution options, comprehensive tracking, refund mechanisms, and exclusive voting, with three primary user roles—Manager, Contributor, and Startup Owner—defined to ensure specific tasks and permissions. The system architecture, designed with multiple layers utilizing React.js for the user interface, Ethers.js for Ethereum interaction, and Ganache for initial deployment and testing, ensures reliability and scalability. Future enhancements may include deploying the smart contract on the Ethereum mainnet, enhancing the user interface, integrating real projects, and exploring additional features, with user feedback and real-world experiments crucial for validation.

III. PROPOSED MODEL

Through deep analysis of current methodologies for crowdfunding, our proposed model integrates smart contract technology within the blockchain framework to increase transparency, security, and efficiency in the fundraising process. Utilizing Ethereum-based smart contracts, we establish programmable agreements that autonomously execute transactions upon meeting predefined conditions, ensuring trust and eliminating the need for intermediaries. The methodology involves defining project parameters, creating and deploying smart contracts on the blockchain, setting funding goals and deadlines, and monitoring contributions in real time. Smart contracts enforce compliance with predetermined rules, ensuring fair distribution of funds and reducing the risk of fraud or mismanagement. Additionally, leveraging blockchain's immutable ledger provides a transparent record of transactions, enhancing accountability and fostering investor confidence in the crowdfunding ecosystem. This innovative approach revolutionizes traditional fundraising methods, offering a seamless and secure platform for project financing.

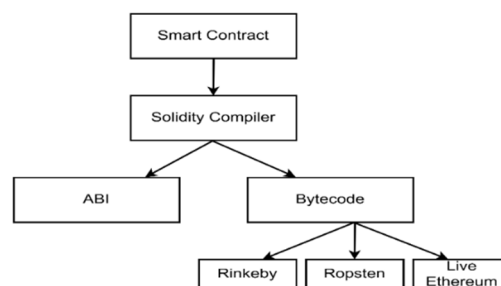


Figure 1. Compilation and deployment of smart contract

Smart contracts, powered by blockchain technology, serve as self-executing digital agreements that automate the execution of predefined actions when specific conditions are met. They ensure transparency, eliminate intermediaries, and enhance security in crowdfunding processes by enabling trustless transactions and immutable record-keeping.

IV. CONCLUSION

To fix the problems and make crowdfunding better, we need to improve a few things. First, we can use Smart Contracts with Blockchain technology. This will help build trust and make fundraising easier. But, it might cost

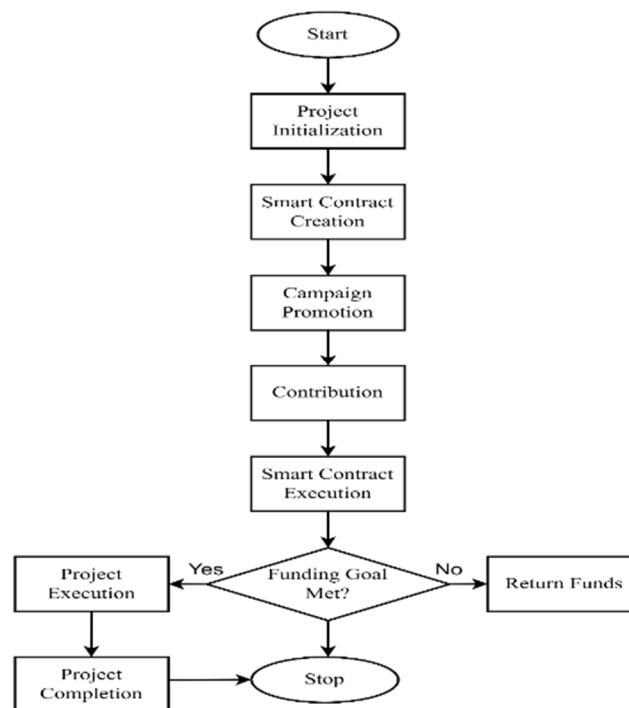


Figure 2. Proposed model

a lot and some countries restrict to use of cryptocurrency, which is generally used with Blockchain. Also, before using Blockchain, we should make sure our online security is strong so that users will use it. Campaign organizers should use social media to tell more people about their fundraisers. We also need to be careful to spot fake campaigns. We can use tools like blockchain technology especially smart contracts to help with this. By doing these things, we can make crowdfunding safer and more reliable for everyone.

Future attempts may include deploying smart contracts on the Ethereum Mainnet for practical utilization, refining the user interface, integrating the system with real-world projects, and exploring supplementary functionalities. Collecting user feedback and conducting real-world experiments are important to validate the system's efficacy and user-friendliness. Blockchain reliability is backed by the intrinsic consensus mechanism of the deployed network, transitioning from a simplified Proof of Authority (PoA) consensus algorithm to Proof of Stake (PoS) for heightened reliability on the Ethereum Mainnet Exploring scalability solutions such as Layer 2 Polygon technology can further increase blockchain performance, while ongoing DApp development focuses on creating a native user interface with React for frontend design, ensuring a seamless and user-friendly experience.

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