CROWDFUNDING IN DECENTRALIZED PLATFORMSURVEY

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Abstract— A fresh and creative way to finance different kinds of projects is through crowdfunding, which allows the initiatives' individual creators to submit financial requests. The endeavours could be driven by social, cultural, or commercial goals. Usually, the money is provided in exchange for stock or future goods. It involves connecting investors and entrepreneurs through online social media platforms to raise money for a variety of ventures in exchange for rewards. Social media and the internet emerged as new outlets. The internet and social media are essential tools for business owners and other nonprofits looking to raise money. The role of technology in crowdfunding will be covered first in this article, then the several crowdfunding sites that have recently surfaced. Blockchain is an exclusive, autonomous, and transparent technology that maintains the transparency of parties' transactions. The foundation of crowdfunding is trust between stakeholders and investors. New technologies have a lot of possibilities for both individuals and crowdfunding organisations. Blockchain-powered crowdfunding platforms give a lot of projects and endeavours more legitimacy, which draws big money from contributors and investors. Keywords: Smart Contracts, Blockchain Technology, Crowdfunding, and Synergy

I. INTRODUCTION

One of the most well-liked ways to raise money for any project, charity, or needy person these days is through crowdfunding. Since the introduction of Covid, there has been a global surge in the number of crowdfunding initiatives. These initiatives range in size from small-scale campaigns to provide medical aid and oxygen to large-scale initiatives like PM Cares. The main actors in the crowdfunding event were contributors, platforms, and project managers. Crowdfunding sites like Kickstarter, Indiegogo, and Mystartr are among the most well-known. The ability of crowdfunding to acquire necessary funds fast is by far its greatest advantage. Blockchain is an immutable, decentralised database that facilitates asset tracking and transaction recording in a business network. An intangible asset (intellectual property, patents, copyrights, branding) is not the same as a tangible asset (a house, car, money, or land).Almost everything of value may be recorded and exchanged on a blockchain network, reducing risk and expenses for all parties. Any firm needs information to survive. The better, the faster and more accurate it is. Blockchain is great for sharing information because it provides instantaneous, shareable, and fully transparent data that is stored on an immutable ledger accessible only to authorised network members. A blockchain network allows for the tracking of orders, payments, accounts, production, and much more. Members only have access to one version of the truth, so you can view every detail of a transaction from start to finish.giving you greater self-assurance and creating new opportunities and efficiencies. The Ethereum blockchain relies heavily on smart contracts, which are essential to its advancement. Although they are fully digital and operate like contracts in the real world, they are computer programmes that are kept on the blockchain. These programmes run automatically in response to predetermined triggers, removing the need for a central authority and enabling anonymous parties to transact securely and reliably. The programming languages used to create Ethereum smart contracts are Solidity and Vyper. With browser extensions or a mobile app, users can access the Ethereum network using the cryptocurrency wallet MetaMask. ConsenSys Software Inc. developed MetaMask, a tool that enables users to broadcast transactions, send and receive Ethereum-based coins and tokens, securely interact with decentralised applications, and store account keys using the built-in browser of the mobile app or a compatible web browser.

II. LITERATURE REVIEW

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6. F. Zhang, X. Zhou, and M. Sun. It was published in the IEEE Transactions on Communications journal,. a constrained VCG (Vickrey-Clarke-Groves) auction mechanism that considers multi-level channel valuations for spatial spectrum reuse in non-symmetric networks.

7. Khoury, R. M. El-Mawas, O. El-Rawas, E. F.a web page change detection system that utilizes an optimized Hungarian algorithm, aiming to efficiently detect and track changes in web pages.

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III. .RESEARCH METHODOLOGY

Research Design: To investigate the use and efficacy of blockchain-based crowdfunding, this study uses a case study methodology. The case study entails the creation of a blockchain-powered crowdfunding platform and an evaluation of its cost-effectiveness, security, and transparency. Methods of Data Collection: In order to gather primary data for this study, a blockchain-based crowdfunding platform was developed. Solidity, Next.js, Node.js, Polygon, Metamask, and IPFS were used in the construction of the platform. The development process included creating a user interface, testing the platform's usability and functionality, and designing and implementing smart contracts. A review of the body of research on blockchain-based crowdfunding, which included news stories, industry reports, and scholarly articles, was done to gather secondary data. The review of the literature offered insights into thepossible advantages and difficulties of blockchain-based crowdfunding, as well as the regulatory environment and industry situation as of right now. Analysis Methods Employed: Several metrics were used to assess the blockchain-based crowdfunding platform's performance, including transaction costs, speed, security, and transparency. Using the Polygon network, which offers an efficient and inexpensive environment for Ethereum-based

transactions, transaction speeds and costs were measured.

By examining the application of smart contracts and the documentation of transactions on a public ledger, security and transparency were assessed. The data collected during the development and testing of the blockchain-based crowdfunding platform was analysed using a combination of qualitative and quantitative methods. Although transaction costs, transaction costs per transaction, and other metrics were determined through quantitative analysis, qualitative analysis was used to Identify usability issues and user feedback.

In summary, this research study used a case study methodology to design and assess a blockchain-based crowdfunding platform. It did this by fusing approaches to both qualitative and quantitative analysis with primary and secondary data sources.
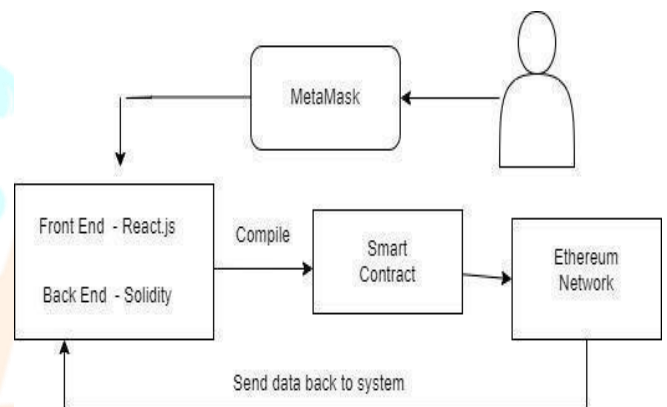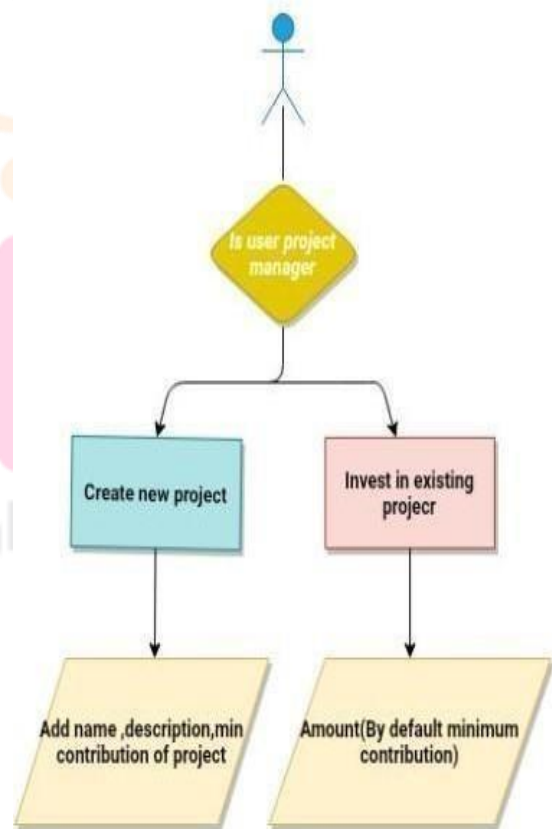

Figure 1: System Architecture

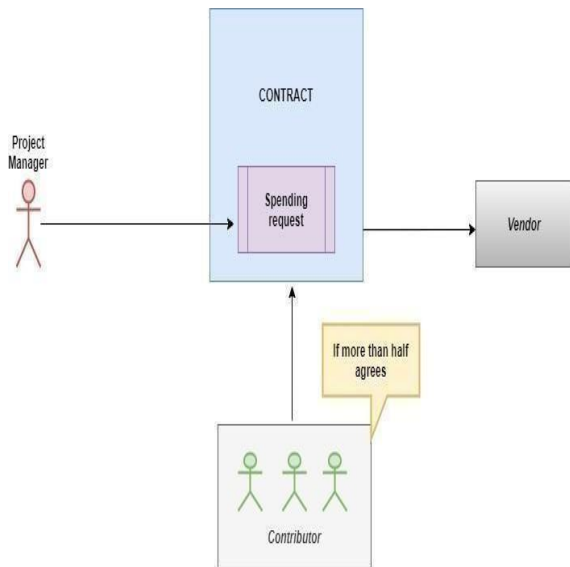**Figure 2**: Creating or contributing to project

Figure 3: Voting system ensures money spent is in control of contributors

IV. ADVANTAGE

Transparency and Trust: Blockchain technology ensures that all crowdfunding activities and transactions are recorded and made available to all participants by providing an immutable and transparent ledger of transactions. Blockchain-based smart contracts can automate crowdfunding agreement execution, guaranteeing transparency and obviating the need for middlemen. By enabling participants to check and audit the financial transactions and flow, trust is built between project creators and backers..

Security: Blockchain makes transactions extremely resistant to fraud, tampering, or unauthorised access by using cutting-edge cryptographic techniques. Crowdfunding funds can be safely kept in blockchain-based wallets, lowering the risk of loss or theft that comes with conventional banking systems.

Worldwide Accessibility: Blockchain technology makes it possible for anyone to participate in crowdfunding campaigns worldwide, regardless of where they live or have access to conventional infrastructure of finance. Crowdfunding campaigns are accessible to anyone with an internet connection and a cryptocurrency wallet, which promotes inclusivity and increases the number of potential backers.

Unchangeability: Since blockchain is a distributed ledger with multiple copies, editing a single transaction without affecting all of the copies at once is almost impossible. This makes the use of blockchain in crowdfunding more reliable and resistant to fraud.

Decreased Commissions and Fees: Crowdfunding platforms can cut transaction fees and administrative costs by using blockchain to replace or lessen the need for middlemen like banks and payment processors. The distribution of funds and payments to project creators can be automated through smart contracts, simplifying the procedure and cutting down on overhead costs.

DISADVANTAGE

Complexity and Technical Knowledge: The development, application, and maintenance of blockchain technology still call for specialised knowledge due to its continued relative complexity. This may pose challenges for non-technical users or project developers who might lack the technical know-how to operate the platform or who are unfamiliar with blockchain principles.

Risk and Volatility: The prices of cryptocurrencies, which are frequently used for transactions on blockchain-based crowdfunding platforms, are prone to large fluctuations. Because of the potential for value fluctuations in funds raised or pledged during the campaign, which could affect the project's financial viability or backers' potential returns, this introduces risk for both project creators and backers

Scalability: One of the primary drawbacks of blockchain technology is its fixed block size for information storage. Considering the 1 MB block size, a single block might only hold a small number of transactions.
Storage: As the number of transactions increases, more storage space will be required due to the fact that blockchain databases are maintained on each network node.

Time-consuming: In order to add the next block to the chain, miners must compute nonce values multiple times. As a result, this laborious process needs to be accelerated for commercial use.

The inability to reverse a transaction :Transactions are usually irreversible once they are registered on the blockchain. This implies that in the case of crowdfunding, backers might not have any options if a project proves to be fraudulent or doesn't live up to expectations. Risks may arise from this absence of dispute resolution procedures for supporters who might run into problems with the project.

RESULTS AND DISCUSSION

Interpretation of Results: This study's results suggest that blockchain-based crowdfunding could displace traditional crowdfunding methods in a transparent, secure, and cost-effective manner. Smart contracts eliminate the need for middlemen and increase transparency by automatically executing and recording all transactions on the blockchain. Since campaign data and images are stored on IPFS, the data is decentralised and immune to censorship. Tiny payments are made possible by the Polygon network's utilisation, which ensures speedy and reasonably priced transactions. Interpretation of Significance: This study is valuable because it demonstrates that using blockchain technology for crowdfunding is both possible and possibly beneficial. The platform developed for this study has several advantages over traditional crowdfunding websites, including lower transaction costs,greater openness and a lower possibility of fraud. These advantages are particularly relevant to crowdfunding projects that aim to raise modest amounts of funding from a large number of contributors. Taking Up the Research Issue or Question: The purpose of this study was to determine whether blockchain-based crowdfunding could provide a transparent, safe, and affordable substitute for traditional crowdfunding techniques. The investigation's results support the assertion that this is, in fact, the case. The crowdfunding platform used in this study is an illustration of how blockchain technology can be applied to create a decentralised, safe, and transparent platform.

Suggestions for Further Research: Even while crowdfunding on the blockchain might have some benefits, there are still a lot of issues that need to be resolved. ensuring adherence to legal requirements, including One of the main obstacles is complying with know-your-customer and anti-money laundering regulations. Future research may focus on developing solutions to these issues, such as the deployment of identity verification systems that work with blockchain technology. Making blockchain-based crowdfunding platforms more user-friendly, particularly for those who are not familiar with the technology, should be the main goal of future research. This may mean developing UIs that are easy to use and providing more guidance and assistance to individuals. Lastly, further research is needed to look into potential applications of blockchain technology in equity and reward-based crowdfunding, among other types of crowdsourcing. The results of this study demonstrate that blockchain-based crowdfunding has the potential to provide traditional crowdfunding methods with an open, safe, and cost-effective substitute. The platform's construction shows that, despite certain unresolved issues, it is possible to create a decentralised and transparent crowdfunding platform using blockchain technology.

Further research and development could lead to the rise in popularity of blockchain-based crowdfunding as a means of financing different projects and causes.

CONCLUSION

Blockchain technology is being used by the crowdfunding platform to increase transparency and lower fraud risk.

By giving people a more reliable platform to donate to charitable causes, this project seeks to address the criticisms levelled at traditional crowdfunding techniques regarding their lack of transparency and vulnerability to fraud. We want to increase user confidence and trust through the use of blockchain, giving them greater security when making donations. Blockchain enables decentralisation in crowdfunding, which means that smart contracts are managed by multiple platforms rather than by one, making the process transparent to the blockchain for all parties. Peer-to-peer networks follow co-protocols and allow nodes to use new blocks, preventing any one from changing a block without the other node's consent.approval from more than half of the blockchain's nodes. Indeed, it does. dependable. On the website, anyone with an internet connection can donate to projects created by others using the blockchain. Participants don't have to be concerned about promises that don't resemble conventional financial aid.

Since the smart contract will handle every transaction, no money will be transferred to outside parties—instead, it will be stored there. Blockchain allows partners to participate in projects with greater freedom for project managers and partners. The survey's overall findings demonstrate the growing interest in and promise of blockchain technology for crowdfunding.

ACKNOWLDEGEMENTS

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