WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Crowd-Funding Using Blockchain Technology

Santosh Kumar[1], Sachin Kumar Yadav[2], Divyanshu Srivastava[3], Abhishek Jha[4], Pawan Dubey [5], Shadab Khan[6]

[1]Assistant Professor, Department of IT, Raj Kumar Goel Institute of Technology, Ghaziabad skwebfit@rkgit.edu.in
[2,3,4,5,6] UG Student, Department of IT, Raj Kumar Goel Institute of Technology, Ghaziabad
[2]sachinkumaryadav3009@gmail.com, [3]divyanshusrivastava3410@gmail.com, [4]abhishekjhagzb2001@gmail.com, [5]pawandubeycmj@gmail.com, [6]shadabshah9503@gmail.com

ABSTRACT

Crowdfunding represents a fresh and inventive approach to financing a variety of projects, where individual initiators of these endeavors can request financial support. These projects may serve commercial, social, or cultural purposes. Typically, funds are provided in exchange for future products or equity. This method involves the utilization of online virtual entertainment platforms to link investors with entrepreneurs seeking capital for diverse projects in exchange for remuneration. Online and virtual entertainment have emerged as novel platforms facilitating fundraising for entrepreneurs and non-profit organizations. This paper begins by examining the role of technology in crowdfunding, followed by an exploration of various crowdfunding platforms that have emerged recently. Blockchain technology stands out as a distinctive, autonomous, and transparent system that ensures transparency in transactions between parties. Crowdfunding relies on the trust established between investors and stakeholders. The emergence of new innovations holds immense potential for both crowdfunding organizations and individuals. Crowdfunding platforms employing blockchain technology enhance the credibility of various projects and initiatives, thereby attracting significant funds from investors and donors.

Keywords: Crowdfunding, Blockchain Technology, Synergy, Smart Contract

1.Introduction

Crowdfunding has emerged as a vital tool for addressing financial disparities, particularly in areas without universal healthcare. Online transactions have revolutionized traditional fundraising approaches. In India, where many are impoverished due to medical costs, crowdfunding has gained popularity. However, concerns persist regarding fraud and donor confidence, especially heightened by the COVID-19 pandemic. This underscores the pressing need for the integration of blockchain technology into crowdsourcing platforms. Particularly in nations lacking universal healthcare coverage, the practice of raising funds through crowdsourcing has gained significant traction. Blockchain integration offers a solution by providing decentralization, transparency, and accountability. This technology enables donors to monitor their contributions and ensures the integrity of data. Smart contracts streamline transactions, boosting efficiency and trust. Platforms like Ethereum, alongside tools such as Solidity and MetaMask, facilitate the implementation of blockchain.

2.Related Work

In the realm of technology, new information is constantly emerging. Blockchain technology, which has recently experienced a surge in popularity, is a framework for securely and reliably creating and storing transactions in distributed ledgers. This paper introduces a blockchain-based platform for managing contracts between students and their higher education sponsors, facilitated by intermediary brokers known as fundraisers. These sponsorships can take various forms, such as scholarships, donations, or loans. A group of competitive fundraisers manage the funds and hold the distributed ledgers, acting as miners in the blockchain network.

Crowdfunding, an online fundraising method, allows individuals to contribute small amounts of money to support innovative ventures. However, existing crowdfunding platforms lack assurance for investors regarding the use of their contributed funds. This paper proposes blockchain-based crowdfunding to provide a private, secure, and decentralized approach to fundraising. By using smart contracts, contributors can maintain control over their invested funds, while both project creators and investors can efficiently manage and allocate funding for projects. This field of technology has witnessed significant advancements in recent years.

3.Methodology

The fundamental architecture of the crowdfunding decentralized application is illustrated in Figure [1], focusing on high-level components. All interactions between a campaign creator (individual seeking to raise funds) and a campaign investor (individual looking to invest) are facilitated by smart contracts specifically designed for the crowdfunding decentralized application and deployed on a blockchain platform. For instance, when an investor wishes to invest a certain amount of money in a particular campaign, a transaction is initiated and sent to the blockchain network, along with additional transaction fees.

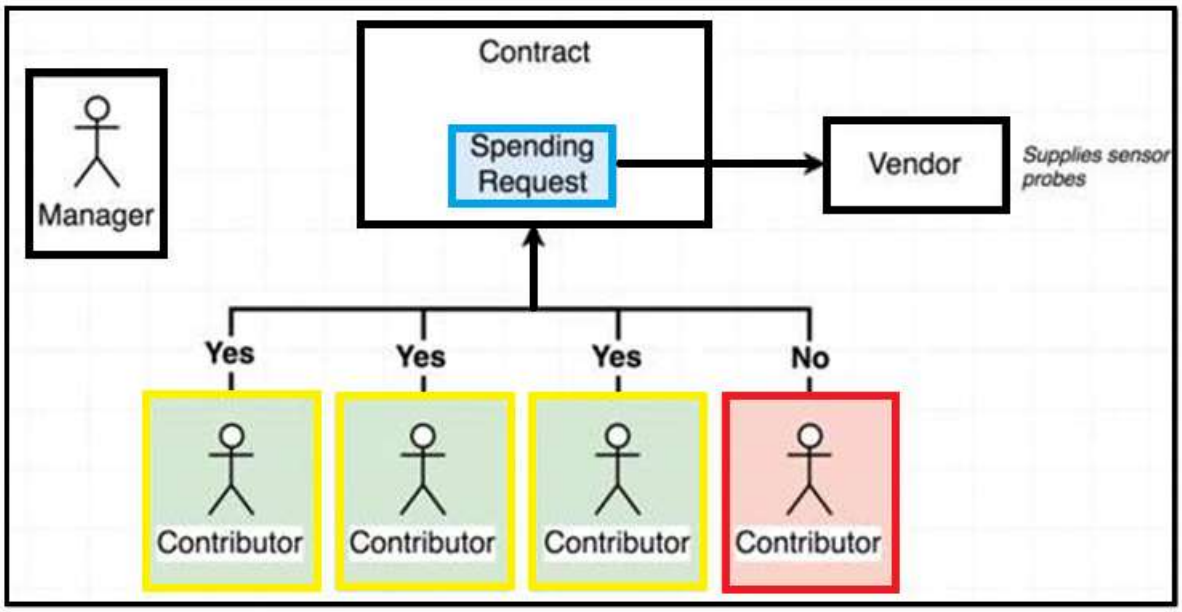

Figure 1: A basic crowdfunding dapp architecture.

The user interface is meticulously crafted to ensure ease of use for both campaign creators and investors. The landing page of the application serves as the gateway to the user interface, as depicted in Figure 2: crowdfunding app user interface design. It comprises campaign tiles providing brief descriptions of each campaign listed on the platform. Users have the option to sort the campaigns based on the categories to which each project belongs.

4. Literature Review

An investigative inquiry conducted by Susana Bernardino and J. Freitas Santos [1] explored the knowledge, advantages, and obstacles faced by aspiring young entrepreneurs. The study found that due to their limited comprehension of crowdfunding, many young entrepreneurs struggled to thoroughly explore various potential business models, particularly those involving investment. They perceive crowdfunding as facilitating easier communication with a broader audience and garnering client feedback.

Cynthia Weiyi Cai's examination [2] identified gaps in the economics and finance literature concerning crowdfunding and blockchain applications. After scrutinizing 402 publications from 2010 to 2018, it concluded that blockchain's trust element reduces the necessity for intermediaries in financial sectors.

K Vidya's research [3] demonstrated the practical feasibility of constructing a crowdfunding application with zero-knowledge user identity verification and user data encryption safeguarded by a lattice-based cryptosystem.

Machine learning has been applied to forecast campaign success, benefiting donors. According to this investigation, the contemporary crowdfunding concept comprises three primary characters: the project initiator, investors, and a connecting system aiding project success.

Atluri Divija Choudary's study [4] examined crowdfunding's constraints after discussing technology's role. It outlined various restrictions, including exorbitant prices, dubious companies, intellectual property

risks, do-it-yourself marketing, and intricate legal regulations. The study highlighted the advantages of blockchain's token system, surplus availability, decentralization, and smart contracts for crowdfunding.

A blockchain-based smart contract, presented by Kangana W.M. and colleagues [5], facilitates crowdfunding management.

Ms. S. Benila and co-authors' project [11] aims to simplify campaign creation and support by offering interactive forms. These forms enable campaign creation, money contributions, campaign monitoring, request approval, and fulfillment, executed through executable code, termed smart contracts.

Dr. Aishath Muneeza and Z. Mustapha [13] emphasized blockchain's potential to reduce transaction costs and instill trust in crowdfunding. They discussed various crowdfunding methods, including donation, reward, lending, and equity crowdfunding.

Cephas P.K. Coffie and Zhao Hongjiang's study [14] identified the relationship between crowdfunding platforms and investors. They emphasized the significance of investor protection and security, addressed by blockchain technology.

Zach Zhizhong and Huasheng Zhu's research [15] delved into equity crowdsourcing, noting its potential to promote innovation. They suggested blockchain as a secure, efficient option for equity crowdsourcing.

André Amedomar and Renata Giovinazzo Spers [16] highlighted reasons for technology-based companies' preference for reward-based funding. They outlined justifications for project creation and analyzed contributing factors to success.

Firmansyah Ashari [17] discussed how COVID-19 prompted fundraising efforts, emphasizing blockchain's role in gaining donor trust through smart contracts.

Blockchain's versatility extends to various applications, including cryptocurrency price prediction [18, 23], certification verification, and healthcare management [19-22].

Ankita A. Malve, Shweta M. Barhate, and Satish J. Sharma [24] illustrated blockchain's potential to enhance communication between funders and fundraisers, facilitating streamlined transactions.

Felix Hartmann, Gloria Grottolo, Xiaofeng Wang, and Maria Ilaria Lunesu [25] identified decentralization, transparency, and secure transactions as key factors contributing to blockchain fundraising success.

Alex Bockel and Jacob Horisch [26] discussed sustainability and crowdfunding, emphasizing crowdfunding's superiority over traditional methods in supporting sustainable development initiatives.

The challenges associated with crowdfunding are manifold:

1. The financial reporting obligations for funds acquired through crowdfunding are often unclear, leading to confusion.

2. There is a risk of duplicity, with the same individual or fundraiser launching identical campaigns on multiple platforms.

3. Terrorist organizations may attempt to raise funds under the guise of charitable or non-governmental organizations, particularly targeting vulnerable populations in impoverished nations like Yemen and Lebanon.

4. While only 0.05% of projects on the Milaap crowdfunding site are flagged for fraud, a significantly higher 23% of projects on Ketto are rejected due to suspicion.

5. The viability of a project hinges largely on its core concept, which must be protected to ensure the business's success.

5. Future Scope

The potential impact of blockchain technology on crowdfunding is immense, offering numerous benefits to app development in this field. It's anticipated that blockchain will become a standard for secure online transactions across various technologies worldwide. Crowdfunding platforms stand to benefit greatly from blockchain implementation.

A prevalent issue in the current crowdfunding landscape globally is the lack of regulation, leading to instances of fraud within campaigns and significant project delays. This initiative seeks to address these challenges by integrating Ethereum smart contracts into crowdfunding platforms. These smart contracts ensure automatic execution, thereby preventing fraudulent activities and ensuring timely project delivery.

In summary, the extensive capabilities of blockchain present promising solutions to the challenges faced by crowdfunding platforms, paving the way for more secure and efficient fundraising processes in the future.

6.Conclusion

Crowdfunding holds significant promise for current and future funding needs, despite its inherent challenges. As blockchain technology becomes more prominent, crowdfunding is expected to become more transparent and accessible, revolutionizing the fundraising landscape.

This paper proposes an online crowdfunding system leveraging blockchain technology, specifically Ethereum smart contracts, to address key issues encountered in traditional crowdfunding platforms. By enhancing trust, transparency, and control over funds, this innovative approach offers a secure and reliable means for startups to raise capital. It has the potential to transform how startups secure funding.

Crowdfunding has effectively bridged the gap between those seeking assistance and those willing to provide support, but it also faces growing risks, including scams. Strict regulations are necessary before blockchain adoption, and leveraging social media and AI can aid in campaign management and fraud detection.

7.References:

1. VIDYA, K., Hussain, H.I., Celestine, V., Kumar, V. and ROBERT, V.N.J., 2022. Security Enhanced Crowdfunding Using Blockchain and Lattice Based Cryptosystem.

2. Reichenbach, F. and Walther, M., 2021. Signals in equity-based crowdfunding and risk of failure. Financial Innovation, 7(1), pp.1-30.

3. Ashari, F., Catonsukmoro, T., Bad, W.M. and Sfenranto, W., 2020. Smart contract and blockchain for crowdfunding platform. International Journal of Advanced Trends in Computer Science and Engineering, pp.3036-3041.

4. Böckel, A., Hörisch, J. and Tenner, I., 2021. A systematic literature review of crowdfunding and sustainability: highlighting what really matters. Management review quarterly, 71(2), pp.433-453.

5. Raveena, V. and Sunayana, N., 2022. Challenges of Crowdfunding During Covid-19 Period. Journal of Positive School Psychology, pp.8265-8273.

6. Bernardino, S. and Santos, J.F., 2020. Crowdfunding: an exploratory study on knowledge, benefits and barriers perceived by young potential entrepreneurs. Journal of Risk and Financial Management, 13(4), p.81.

7. Benila, M.S., Ajay, V., Hrishikesh, K. and Karthick, R., 2019. Crowd Funding using Blockchain. GRD Journals.

8. Hartmann, F., Grottolo, G., Wang, X. and Lunesu, M.I., 2019, February. Alternative fundraising: success factors for blockchain-based vs. conventional crowdfunding. In 2019 IEEE international workshop on blockchain oriented software engineering (IWBOSE) (pp. 38-43). IEEE.

9. Muneeza, A. and Mustapha, Z., 2020. Application of blockchain technology in crowdfunding to fuel the rise of the rest globally. A Journal of Interest Free Microfinance, 7(1), pp.9-26.

10. Amedomar, A. and Spers, R.G., 2018. Rewardbased crowdfunding: a study of the entrepreneurs' motivations when choosing the model as a venture capital alternative in Brazil. International Journal of Innovation, 6(2), pp.147-163.

11. Cai, C.W., 2018. Disruption of financial intermediation by FinTech: a review on crowdfunding and blockchain. Accounting & Finance, 58(4), pp.965-992.

12. Zhao, H. and Coffie, C.P., 2018. The applications of blockchain technology in crowdfunding contract. Available at SSRN, 3133176.

13. Gebert, M., 2017. Application of blockchain technology in crowdfunding. New European, 18.

14. Sarkar, A., 2016. Crowd Funding in India: Issues & Challenges. Available at SSRN 2739008.

15. Zhu, H. and Zhou, Z.Z., 2016. Analysis and outlook of applications of blockchain technology to equity crowdfunding in China. Financial innovation, 2(1), pp.1-11.

16. Mollick, E., 2014. The dynamics of crowdfunding: An exploratory study. Journal of business venturing, 29(1), pp.1-16.

17. N. Masla, V. Vyas, J. Gautam, R. N. Shaw and A. Ghosh, "Reduction in Gas Cost for Blockchain Enabled Smart Contract," 2021 IEEE 4th International Conference on Computing, Power and Communication Technologies (GUCON), 2021, pp. 1- 6, doi: 10.1109/GUCON50781.2021.9573701.

18. Malsa, N., Vyas, V., Gautam, J. (2022). Blockchain Platforms and Interpreting the Effects of Bitcoin Pricing on Cryptocurrencies. In: Sharma, T.K., Ahn, C.W., Verma, O.P., Panigrahi, B.K. (eds) Soft Computing: Theories and Applications. Advances in Intelligent Systems and Computing, vol 1380. Springer, Singapore. https://doi.org/10.1007/978-981-16-1740-9_13

19. Pathak, S., Gupta, V., Malsa, N., Ghosh, A., Shaw, R.N. (2022). Blockchain-Based Academic Certificate Verification System—A Review. In: Shaw, R.N., Das, S., Piuri, V., Bianchini, M. (eds) Advanced Computing and Intelligent Technologies. Lecture Notes in Electrical Engineering, vol 914. Springer, Singapore. https://doi.org/10.1007/978-981-19- 2980-9_42

20. Pathak, S., Gupta, V., Malsa, N., Ghosh, A., Shaw, R.N. (2022). Smart Contract for Academic Certificate Verification Using Ethereum. In: Shaw, R.N., Das, S., Piuri, V., Bianchini, M. (eds) Advanced Computing and Intelligent Technologies. Lecture Notes in Electrical Engineering, vol 914. Springer, Singapore. https://doi.org/10.1007/978-981-19- 2980-9_29

21. Malsa, N., Vyas, V., Gautam, J., Shaw, R.N., Ghosh, A. (2021). Framework and Smart Contract for Blockchain Enabled Certificate Verification System Using Robotics. In: Bianchini, M., Simic, M., Ghosh, A., Shaw, R.N. (eds) Machine Learning for Robotics Applications. Studies in Computational Intelligence, vol 960. Springer, Singapore. https://doi.org/10.1007/978-981-16-0598-7_10

22. N. Malsa, V. Vyas, J. Gautam, A. Ghosh and R. N. Shaw, "CERTbchain: A Step by Step Approach Towards Building A Blockchain Based Distributed Appliaction for Certificate Verification System," 2021 IEEE 6th International Conference on Computing, Communication and Automation (ICCCA), 2021, pp. 800-806, doi: 10.1109/ICCCA52192.2021.9666311.

23. Malsa, N., Vyas, V. & Gautam, J. RMSE calculation of LSTM models for predicting prices of different cryptocurrencies. Int J Syst Assur EngManag (2021). https://doi.org/10.1007/s13198- 021-01431-1

24. Ankita A. Malve,Shweta M. Barhate,Satish J. Sharma"Trusted Crowdfunding Using Smart Contract", International Journal of Emerging Technologies and Innovative Research (www.jetir.org), ISSN:2349-5162, Vol.9, Issue 6, page no.371-375, June-2022

25. Gutsche, J., &Sylla, S. (2018). Success factors of crowdfunding projects on the kickstarter platform. In German-Turkish Perspectives on IT and Innovation Management (pp. 361-374). Springer Gabler, Wiesbaden.

26. Alexa Böckel& Jacob Hörisch& Isabell Tenner, 2021. "A systematic literature review of crowdfunding and sustainability: highlighting what really matters," Management Review Quarterly, Springer, vol. 71(2), pages 433-453, April.