

Blockchain-Based Decentralized Crowdfunding Application

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Abstract

A brief overview of the project, including the problem statement, objectives, methodology, and expected outcomes.

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Chapter 1

Introduction

1.1 Background

Discuss the importance of crowdfunding and the role of blockchain technology in transforming this industry.

Crowdfunding is a way people to raise money for their projects and ideas by collecting small amounts of money from many individuals, usually through the Internet. It helps creators, entrepreneurs, or organizations to get financial support without having to rely on traditional banks and investors.(Investopedia, 2023)

1.1.1 How Crowdfunding Works:

Someone with an idea or project creates a campaign on a crowdfunding platform and explains the reason they need the fund and how it will benefit others.(Investopedia, 2023). Usually, every campaign has a financial goal which is an amount of money to be raised within a specific time frame.(Investopedia, 2023). Depending upon the type of crowdfunding, backers may receive rewards (like products or experiences) or equity (a share of the business) in return for their support.(Investopedia, 2023). The creator will promote their campaign through various channels like social media, and emails to reach potential backers.(Investopedia, 2023). If enough people fund the campaign and the funding goal is met, the creator will receive the funds to move forward. If the goal is not reached, sometimes the money is returned to the backers.(Investopedia, 2023)

1.1.2 Types of Crowdfunding:

Reward-based crowdfunding where backers will receive rewards for their contribution, like a product or service.(Legalvision, 2024) Equity-based crowdfunding where backers receive a share of the company in exchange for their investment.(Legalvision, 2024) People give money without expecting anything in return, often for charitable causes as donations.(Legalvision, 2024) And lending-based crowdfunding where backers lend money to individuals or businesses with the expectation of being paid back with interest.(Legalvision, 2024)

1.2 Blockchain Technology in Crowdfunding

Blockchain technology introduces a decentralized approach to crowdfunding, eliminating the need for intermediaries. By leveraging a distributed ledger, blockchain enables secure, transparent, and tamper-proof transactions. This ensures that all parties involved in the crowdfunding process can trust the system without the need for a central authority. Blockchain-based platforms can significantly reduce the transaction fees associated with crowdfunding. Blockchain allows for cross-border transactions without the need for currency conversions or international banking processes, making crowdfunding more accessible worldwide.

1.3 Problem Statement

Crowdfunding has become a vital tool for startups, social causes, and creative projects, enabling them to raise funds directly from the public through online platforms. Traditional crowdfunding platforms such as Kickstarter, GoFundMe, and Indiegogo have played a significant role in this space, offering a centralized system for campaign management and fund collection.

However, these traditional platforms exhibit several limitations that can hinder the effectiveness and fairness of the crowdfunding process. Centralization allows platform operators to exert significant control over campaigns, including the imposition of fees, policy changes, or even the suspension of campaigns. This centralization limits the autonomy

of project creators and introduces single points of failure.

Transparency is another critical issue in current crowdfunding models. Backers often lack real-time visibility into how their contributions are being used, leading to concerns about fund mismanagement or fraud. The centralized nature of these platforms also means that they are vulnerable to security breaches and fraudulent campaigns.

Furthermore, traditional platforms impose significant fees, which reduce the funds available for project creators. These fees, combined with limited access to global participants due to regulatory and payment system barriers, restrict the potential reach of crowdfunding campaigns.

Current blockchain-based crowdfunding platforms attempt to address some of these issues but still face challenges related to usability, accessibility, and adoption. Many existing solutions are either too complex for the average user or fail to provide the level of transparency and security that backers and project creators require.

This project aims to address the gap in decentralization, transparency, and trust by developing a blockchain-based crowdfunding platform. The proposed platform will eliminate the need for a central authority, provide real-time visibility of fund management through a public ledger, and enhance security and trust through the use of smart contracts. By offering global accessibility with lower transaction fees and customizable funding structures, this project seeks to overcome the limitations of both traditional and existing blockchain-based crowdfunding models, paving the way for a more inclusive and trustworthy crowdfunding ecosystem.

1.4 Objectives

The primary objectives of this project are as follows:

- **Develop a Decentralized Crowdfunding Platform:** Design and implement a blockchain-based crowdfunding platform that operates without a central authority, enabling project creators to manage their campaigns autonomously.
- **Enhance Transparency and Trust:** Utilize blockchain technology to provide real-time transparency of fund allocation and usage, ensuring that backers can

track their contributions throughout the campaign lifecycle.

- **Global Reach and Inclusion:** Ensure the platform is accessible to users worldwide, overcoming geographical barriers imposed by traditional platforms and fostering financial inclusion.

Chapter 2

Literature Review

2.1 Existing Solutions

Review traditional and blockchain-based crowdfunding platforms.

2.1.1 Traditional Crowdfunding Platforms in New Zealand:

1. PledgeMe:

PledgeMe offers both reward-based and equity-based crowdfunding. For reward-based campaigns, project creators offer rewards in exchange for contributions. For equity-based campaigns, backers receive shares in the company.(PledgeMe, 2024) PledgeMe helps project creators by providing a platform to reach potential backers and raise the necessary funds. It also offers a way for backers to support projects they believe in, either by receiving rewards or gaining equity in a company.(PledgeMe, 2024)

The screenshot shows the Pledge Me website homepage. At the top, there's a navigation bar with links for 'Create', 'Education', and 'Campaigns'. The main title 'Pledge Me' is displayed with the tagline 'Helping Kiwis fund the things they care about.' Below the title, a large banner features the text 'PŪTEA FOR PAKIHI' and 'WHĀRIKI' repeated across it. The main content area is divided into two sections: 'Investment campaigns' and 'Project campaigns'. Under 'Investment campaigns', there are three projects listed:

- Ezy Peazy (Yivvan Limited)**: Investment: Technology. Description: Ezy Peazy provides a community-driven platform for posting and fulfilling one-off jobs, fostering opportunities to earn extra income. By Sumit. Minimum target: NZ \$150,000. Days left: 17. Pledged: NZ \$25,600.
- Norish Limited**: Investment: NORISH is a category-changing baby food developed in New Zealand. We're raising to accelerate our growth and impact. By Gina Ulrich. Minimum target: NZ \$350,000. Days left: Closed. Pledged: NZ \$547,650.
- KEA Outdoors**: Investment: KEA Outdoors. We build innovative outdoor gear for this every-day adventurer and are on a mission to take our gear from New Zealand to the World! By Matt Butler. Minimum target: NZ \$250,000. Days left: Closed. Pledged: NZ \$384,906.

Under 'Project campaigns', there are several projects listed, each with a thumbnail image and a brief description. The interface includes a Windows taskbar at the bottom with various pinned icons like Mail, Photos, and File Explorer.

Figure 2.1: Pledge Me Home Page Investment Campaigns.

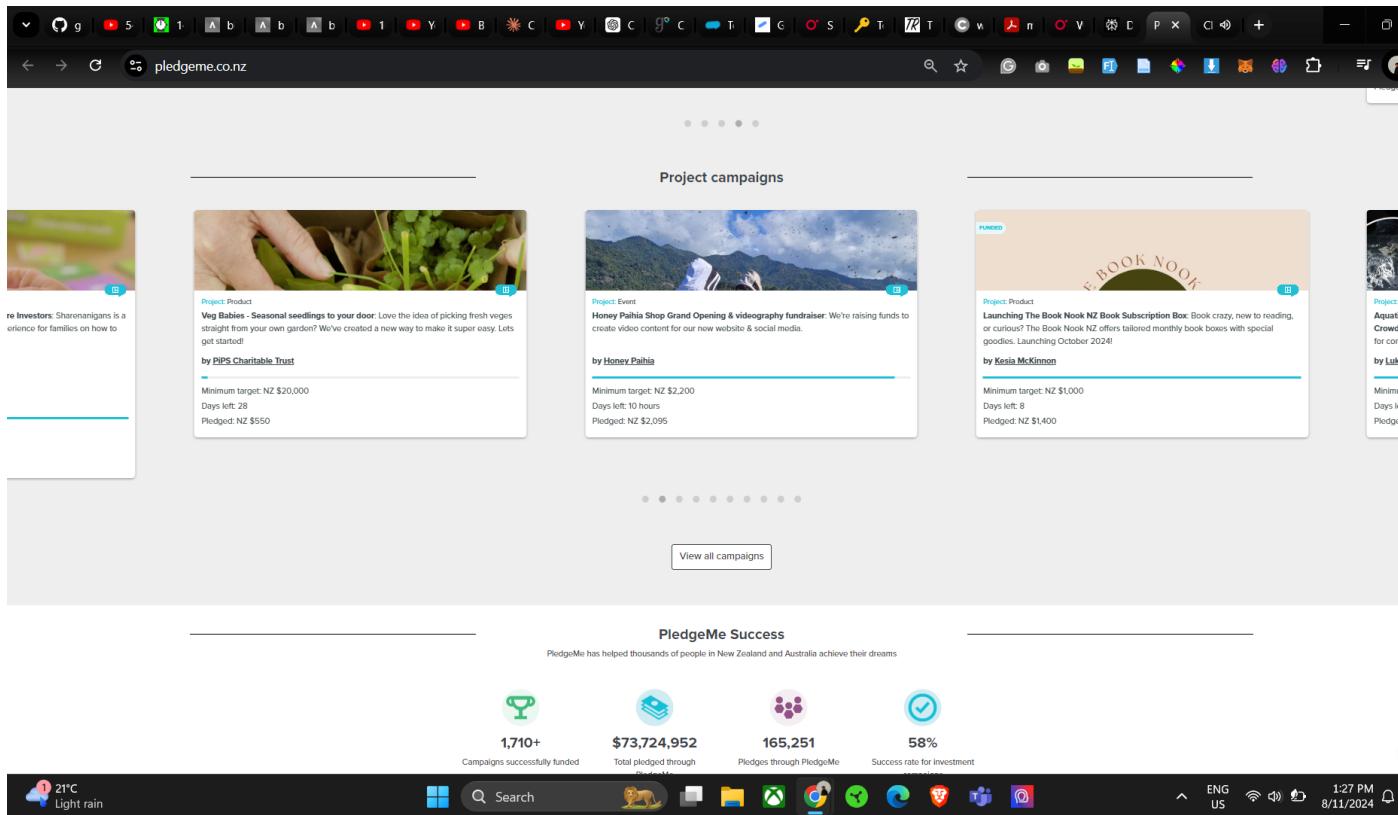


Figure 2.2: Pledge Me Home Project Campaigns.

Snowball Effect:

Snowball Effect is primarily an equity crowdfunding platform. It allows companies to raise capital by offering shares to the public. This platform is used by companies at various growth stages, from startups to more mature businesses looking for expansion capital.(SnowballEffect, 2024)

For project creators, Snowball Effect provides access to a wide investor audience and simplifies the process of raising funds. For investors, it offers opportunities to invest in private companies and potentially gain significant returns.(SnowballEffect, 2024)

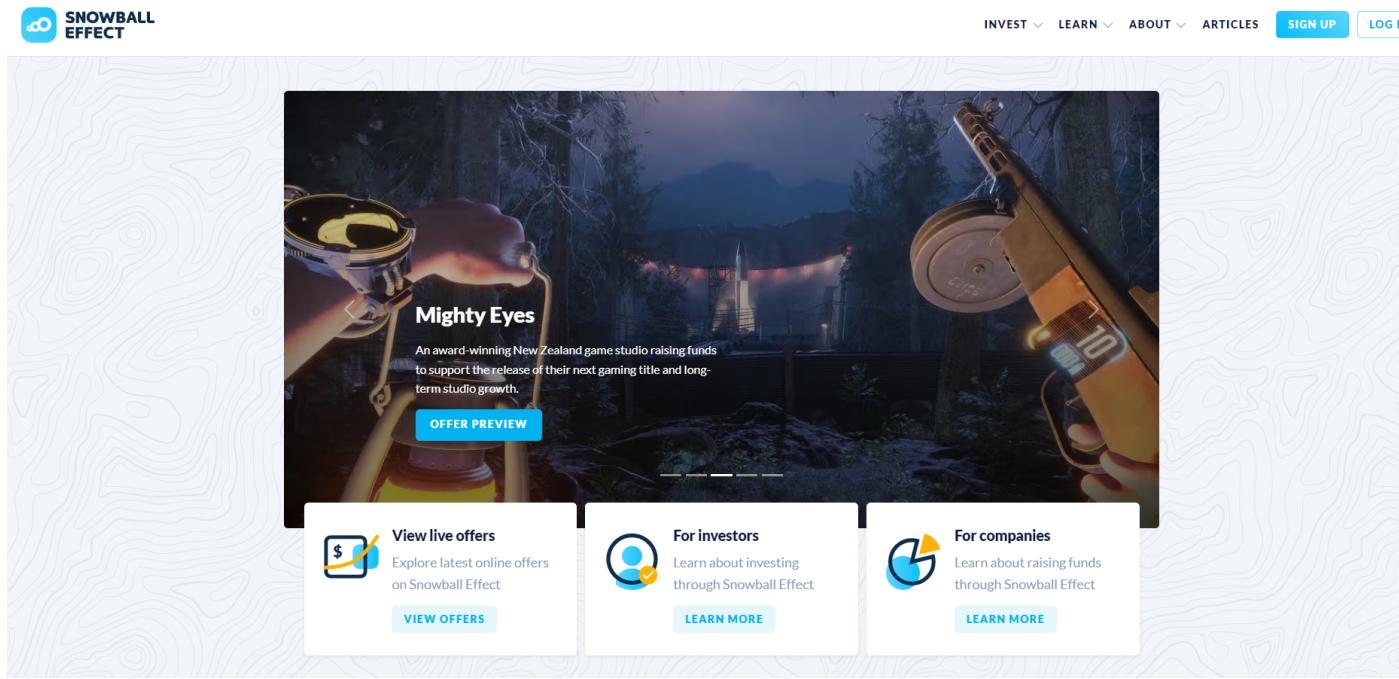


Figure 2.3: Snowball Effect Home Page Investment Campaigns.

Collinson Crowdfunding:

These platforms also focus on equity crowdfunding, allowing companies to raise funds by offering shares to the public. Each platform has its unique features and market focus.

(Collinson, 2024)

These platforms provide similar benefits to Snowball Effect, helping companies raise capital efficiently while giving investors access to investment opportunities in private companies.(Collinson, 2024)

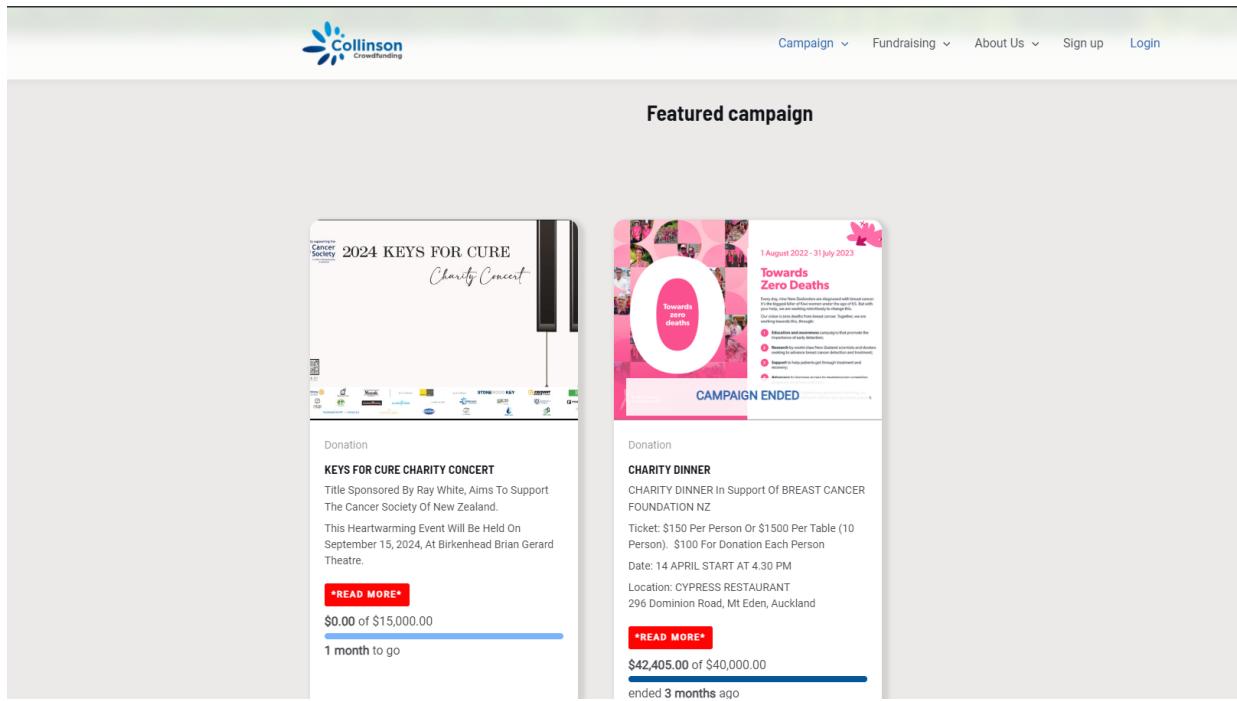


Figure 2.4: Collinson Crowdfunding Home Page Investment Campaigns.

Givealittle:

Givealittle is a donation-based crowdfunding platform. It allows individuals, charities, and organizations to raise funds for various causes without expecting anything in return. (Givealittle, 2024)

This platform is particularly impactful for charitable causes, personal emergencies, and community projects. It provides a simple and accessible way for people to support causes they care about. (Givealittle, 2024)



Figure 2.5: Givealittle Home Page.

Equitise:

Equitise focuses on equity-based crowdfunding. It allows startups and growing companies to raise capital by offering shares to the public. This platform is designed to connect investors with innovative companies looking for growth capital.(Equitise, 2024) Equitise helps startups and growing companies access a broad base of investors, facilitating the capital-raising process and enabling business expansion. For investors, it provides opportunities to invest in promising companies with potential for high returns. (Equitise, 2024)

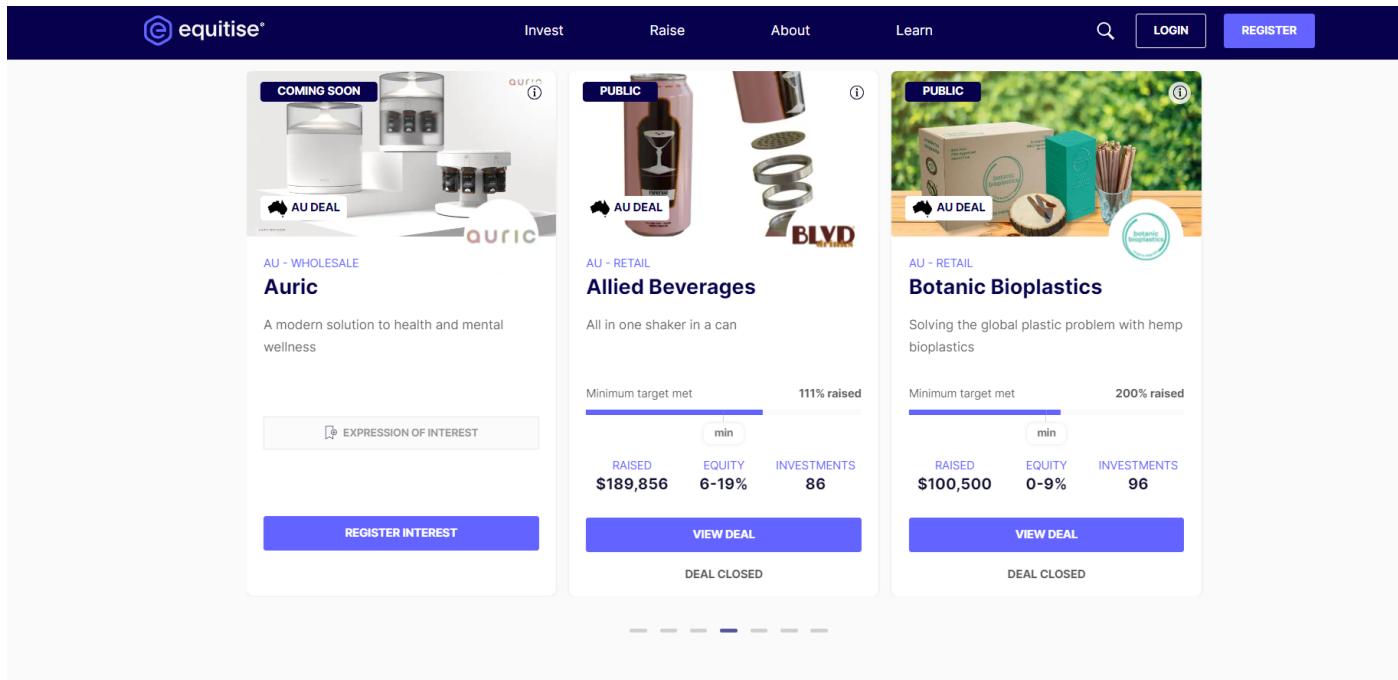


Figure 2.6: Equitise Home Page.

2.1.2 Limitations:

- Centralization:** Because these platforms are centralized, they have considerable control over which projects are offered and how well campaigns perform. This may restrict the options available to certain project creators.
- High Fees:** Crowdfunding platforms typically charge for their services and this charge can account for a sizeable amount of the funds received. As a result, project creators receive a less net sum.
- Transparency:** Even though these platforms claim to be transparent, there are still issues with the amount of information disclosed by project creators. It is possible that investors and donors might not always have a full understanding of a project's risks and financial standing.
- Security:** Even with Financial Markets Authority (FMA) regulation, there is always a chance of fraud or financial mismanagement. Maintaining security and

confidence is still difficult.

5. **Global Accessibility:** Due to legal and logistical issues, traditional crowdfunding platforms might not be able to reach a worldwide audience. This may limit the possible group of backers and investors.

2.2 Review of Related Research Papers:

The paper "Crowdfunding Platforms: A Systematic Literature Review and a Bibliometric Analysis" deepens into the evolution and current state of crowdfunding platforms, even indicating an outstanding rise in academic interest for research in this area. (Mora-Cruz & Palos-Sanchez, 2023) It categorizes crowdfunding into various models: reward-based, equity-based, donation-based, lending-based, each with its own characteristics and challenges. (Mora-Cruz & Palos-Sanchez, 2023) The problems identified with traditional crowdfunding platforms include lack of transparency, security issues, and high fees and centralization imposed on project creators, which may end up limiting freedom and introducing single points of failure. Besides, we deal with the platform economics and user behavior that provide insight into how a crowdfunding platform operates and how the users interact with such systems.(Mora-Cruz & Palos-Sanchez, 2023) These findings highlight the potential of blockchain technology in tackling these challenges: decentralized, secure, and transparent in solutions proffered, hence increasing total efficacy and reach within this market of crowdfunding initiatives.(Mora-Cruz & Palos-Sanchez, 2023)

The paper "Fund Crypt: Blockchain based Crowdfunding Platform using SHA-256 POS Algorithm" by P. Kumbharkar and Rushikesh Palaskar investigates how blockchain technology can be integrated with crowdfunding in terms of decentralization, transparency, and security using SHA-256 hashing and Proof of Stake (POS) consensus.(Kumbharkar et al., 2023) There is special attention to the use of smart contracts, which further increase automation regarding transactions, reducing cost and susceptibility to fraud with absolutely no intermediaries. Benefits may include efficiency and security for entrepreneurs,

investors, and developers by using a platform toward improved funding. Key considerations are made while developing the decentralized crowdfunding application: user experience, regulatory compliance, choice of algorithms in a way that balances the two features—security and sustainability.(Kumbharkar et al., 2023)

The paper "Blockchain Based Crowdfunding Using Ethereum Smart Contract" by Prof. Dipali Pawar examines how Ethereum smart contracts can overcome issues in traditional crowdfunding, including trust deficits, lack of transparency, and excessive intermediary control. (Pawar, 2023) By utilizing blockchain's decentralized, immutable, and transparent nature, the study highlights the potential to lower costs, reduce fraud, and facilitate global participation. The emphasis is on Ethereum smart contracts for automating transactions and ensuring effective fund usage. Additionally, the paper addresses real-world applications, regulatory challenges, and the critical role of security in creating a decentralized crowdfunding platform.(Pawar, 2023)

The paper "FarmFund - A Blockchain Based Crowdfunding App for Farmers" by S. Rashmitha and H. A. Sanjay proposes a blockchain-based crowdfunding platform that enables farmers to access capital while providing investors with returns based on the farmers' profits.(Rashmitha et al., 2022) The platform enhances transparency and trust through blockchain technology, integrates a credit score system to evaluate farmers' creditworthiness, and employs a Plasma-based distributed ledger for cost-effective, gasless transactions. This approach aims to create a balanced, mutually beneficial crowdfunding model that meets the needs of both farmers and investors. (Rashmitha et al., 2022)

This paper "FinTech and FinTech ecosystem: A review of literature" by Zakia Siddiqui and C. Rivera provides an in-depth analysis of the FinTech ecosystem, focusing on how financial technologies are transforming the financial services industry. It explores various FinTech innovations, including artificial intelligence, blockchain, and crowdfund-

ing, and examines their impact across different financial sectors.(Siddiqui & Rivera, 2022) The paper underscores how FinTech has enhanced efficiency and accessibility in financial services, creating value for innovators, customers, and society. Additionally, it identifies emerging trends and suggests areas for future research, making it a valuable resource for academics, practitioners, and policymakers interested in the evolving FinTech landscape.(Siddiqui & Rivera, 2022)

2.3 Gaps in Research

Trust and Transparency Issues: Traditional crowdfunding platforms often face challenges related to transparency, which can lead to a deficit of trust among backers and project creators. Contributors typically lack the ability to verify the utilization of their funds, potentially deterring them from supporting projects. A blockchain-based crowdfunding platform addresses this issue by providing a decentralized and transparent ledger where all transactions are recorded immutably. This enhanced transparency fosters trust among users, as they can independently verify the flow and use of funds, ensuring that their contributions are being utilized as intended.(Baah-Peprah, 2023)

Intermediary Control and High Fees : Current crowdfunding platforms generally rely on intermediaries to facilitate transactions between backers and project creators, often resulting in substantial fees and reduced profits for both parties. The integration of blockchain technology eliminates the need for these intermediaries, enabling direct peer-to-peer transactions. This not only reduces transaction costs but also ensures that project creators receive a larger share of the funds raised, while backers benefit from lower contribution fees. The inherent decentralization of blockchain ensures that control is distributed, further empowering both backers and project creators.(Mora-Cruz & Palos-Sanchez, 2023)

Fraud and Mismanagement Risks : One of the significant risks in traditional crowdfunding is the potential for fraud or mismanagement of funds, where project creators might misuse the contributions, leading to a loss of trust and financial damage for backers. A blockchain-based crowdfunding platform can mitigate these risks through the

use of smart contracts. These contracts automatically execute predefined actions, such as releasing funds to project creators only when specific milestones are met. This automation reduces the likelihood of fraud or mismanagement, as funds are distributed in a controlled and transparent manner, ensuring that backers' investments are protected.(Baah-Peprah, 2023)

Delayed Fund Access: In traditional crowdfunding platforms, access to funds can be delayed due to the involvement of multiple intermediaries and the time required for manual processing. For project creators, particularly those working on time-sensitive initiatives, such delays can be detrimental. Blockchain technology enables near-instantaneous fund transfers through its decentralized and automated processes. Once a funding milestone is reached, smart contracts can promptly release the funds to the project creator without unnecessary delays, providing them with the necessary capital to initiate or continue their project in a timely manner.(Baah-Peprah, 2023)

Chapter 3

Project Description

3.1 System Overview

Describe the overall architecture of the decentralized crowdfunding platform.

The decentralized crowdfunding platform is built on a blockchain architecture, leveraging Ethereum's smart contract functionality to facilitate secure, transparent, and trustless transactions between backers and project creators. The platform's architecture is composed of several key components, each designed to ensure the integrity, efficiency, and scalability of the crowdfunding process.

3.1.1 Blockchain Layer

At the core of the system is the blockchain layer, which operates on the Ethereum network. This layer is responsible for maintaining a distributed ledger that records all transactions, ensuring that they are immutable and transparent. The blockchain layer eliminates the need for centralized intermediaries, reducing transaction costs and enhancing security. Smart contracts, written in Solidity, are deployed on this layer to automate the execution of fundraising campaigns, fund disbursement, and reward distribution based on predefined conditions.(Pawar, 2023)

3.1.2 Smart Contract Layer

The smart contract layer consists of self-executing contracts that govern the interactions between backers and project creators. Each crowdfunding campaign is represented by a smart contract that outlines the terms and conditions, including funding goals, deadlines, and reward structures. When a campaign meets its funding goal, the smart contract

automatically releases the funds to the project creator. If the goal is not met, the funds are returned to the backers. This layer ensures that all transactions are executed exactly as programmed, without the possibility of fraud or manual intervention.(Pawar, 2023)

3.1.3 User Interface Layer

The user interface (UI) layer is the front-end component of the platform, designed to provide an intuitive and user-friendly experience for both backers and project creators. This layer interacts with the blockchain and smart contract layers through decentralized applications (dApps), allowing users to browse campaigns, make contributions, and track the progress of their investments. The UI layer is built using modern web technologies such as React.js, enabling a responsive and seamless user experience across devices.(Pawar, 2023)

3.1.4 Integration Layer

To enhance the platform's functionality, the integration layer connects the decentralized crowdfunding platform with external services and platforms. This includes integration with cryptocurrency wallets, payment gateways, and oracles for real-time data feeds. (Pawar, 2023)

3.1.5 Security and Compliance Layer

Given the critical importance of security in a decentralized platform, the security and compliance layer is responsible for implementing robust security protocols, including encryption, multi-signature wallets, and audit trails.(Pawar, 2023)

3.2 Key Features

3.2.1 Smart Contracts

Smart contracts are the backbone of the decentralized crowdfunding platform, providing automation and security for all transactions. These self-executing contracts are deployed

on the Ethereum blockchain and are programmed to enforce the rules and conditions of each crowdfunding campaign. Once a campaign is launched, the smart contract ensures that funds are only released to the project creator if the predefined funding goal is met within the specified timeframe. If the goal is not achieved, the smart contract automatically refunds the contributions to the backers. This eliminates the need for intermediaries, reduces the risk of fraud, and ensures that transactions are secure and transparent.(Pawar, 2023)

3.2.2 User Interface

The user interface (UI) is designed to provide an intuitive and seamless experience for both project creators and backers. Built using modern web technologies such as React.js, the UI allows users to easily browse and search for campaigns, view detailed project descriptions, and contribute funds using cryptocurrency. Project creators can manage their campaigns, track funding progress, and communicate with backers directly through the platform. The UI interacts with the blockchain and smart contract layers via decentralized applications (dApps), ensuring that all user actions are recorded on the blockchain in real-time, providing transparency and accountability.(Pawar, 2023)

3.2.3 Security Measures

Security is a critical aspect of the decentralized crowdfunding platform, and the use of blockchain technology plays a central role in enhancing both security and trust. The platform employs robust security protocols, including encryption, multi-signature wallets, and decentralized identity verification, to protect users' assets and personal information. The immutable nature of blockchain ensures that all transactions are transparent and cannot be tampered with, providing a high level of trust among users. (Pawar, 2023)

3.3 Technology Stack

Specify the technologies, programming languages, and blockchain platform you will use.

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- **Blockchain Platform:** Ethereum, selected for its robust smart contract functionality and widespread adoption.
 - **Smart Contract Language:** Solidity, used for developing and deploying smart contracts on the Ethereum blockchain.
 - **Frontend Framework:** React.js, chosen for building the responsive and dynamic user interface.
 - **Backend Development:** Node.js, used for server-side scripting and handling API requests.
 - **Wallet Integration:** MetaMask, enabling users to interact with the platform through their cryptocurrency wallets.

This technology stack is selected to ensure that the platform is not only secure and transparent but also user-friendly and scalable to meet the demands of a global user base.

Chapter 4

Implementation Plan

4.1 Development Phases

4.1.1 Phase 1: System Design and Architecture

In Phase 1, the foundational system architecture for the decentralized crowdfunding platform will be designed. This will include outlining the core components such as the blockchain network, smart contracts, user interfaces, and backend services. Architectural decisions will focus on scalability, security, and user-friendliness. Detailed system diagrams and documentation will be created to guide subsequent development phases.

4.1.2 Phase 2: Smart Contract Development

Phase 2 will involve the development and deployment of smart contracts on the chosen blockchain platform (e.g., Ethereum). The smart contracts will automate key functions like campaign creation, fund management, and distribution. Solidity will be the primary programming language for these contracts, with rigorous testing conducted to ensure correctness and security.

4.1.3 Phase 3: User Interface and Backend Development

In Phase 3, the front-end user interface and backend services will be developed. The user interface, built with frameworks like React.js, will enable users to interact with the platform seamlessly. The backend, powered by Node.js, will handle data management, API integration, and communication with the blockchain. Emphasis will be placed on creating a responsive, intuitive, and secure user experience.

4.1.4 Phase 4: Integration and Testing

Phase 4 will focus on the integration of all components developed in the previous phases. The platform will undergo comprehensive testing, including functional, performance, and security testing. Integration with blockchain and decentralized storage solutions (such as IPFS) will be verified. This phase will conclude with a beta release, allowing real-world users to test the platform and provide feedback.

4.2 Timeline



Figure 4.1: Project Gantt Chart.

Chapter 5

Evaluation and Testing

5.1 Evaluation Metrics

To assess the effectiveness of the decentralized crowdfunding platform, key performance indicators (KPIs) will be identified and monitored throughout the development and post-deployment phases. The primary KPIs include:

- **Transaction Speed:** Measure the average time required to process transactions on the blockchain, ensuring efficiency.
- **Security Incidents:** Track any security breaches or vulnerabilities identified in the platform to maintain high security standards.
- **User Satisfaction:** Gauge user satisfaction through surveys and feedback, focusing on the usability, reliability, and overall experience of the platform.
- **Uptime and Reliability:** Monitor the uptime and reliability of the platform, aiming for minimal downtime and consistent performance.
- **Scalability:** Evaluate the platform's ability to handle increased load, such as more users or transactions, without performance degradation.

5.2 Testing Strategy

A comprehensive testing strategy will be employed to ensure the platform's robustness and reliability. The testing phases include:

- **Unit Testing:** Individual components, especially smart contracts, will be rigorously tested to ensure they function as intended.

-
- **Integration Testing:** The interaction between the platform's components (e.g., smart contracts, backend, and front-end) will be tested to ensure seamless integration.
 - **Performance Testing:** The platform will undergo stress testing to evaluate its performance under various conditions, such as high traffic or large transaction volumes.
 - **Security Testing:** Penetration testing and vulnerability assessments will be conducted to identify and mitigate security risks.
 - **Beta Testing:** A beta version of the platform will be released to a select group of users for real-world testing. Feedback from beta testers will be collected and used to make necessary adjustments before the final launch.

Chapter 6

Expected Outcomes

6.1 Impact

The development of this decentralized crowdfunding platform is expected to have a significant impact on the crowdfunding industry by:

- **Enhanced Transparency and Trust:** By leveraging blockchain technology, the platform will offer unparalleled transparency in transactions, fostering greater trust between project creators and investors.
- **Lower Transaction Costs:** The elimination of intermediaries will reduce transaction costs, making crowdfunding more accessible and profitable for both campaign creators and contributors.
- **Increased Global Reach:** The decentralized nature of the platform will allow it to operate globally, enabling creators from different regions to access funding from a diverse pool of investors.
- **Empowerment of Underserved Communities:** The platform is poised to empower underserved communities by providing them with new opportunities to raise capital for their projects, particularly in regions with limited access to traditional financial services.

6.2 Scalability

The platform is designed with scalability in mind to ensure it can grow alongside user demand. Key scalability strategies include:

- **Modular Architecture:** The platform's architecture will be modular, allowing for

the addition of new features and services without disrupting existing operations.

- **Cloud-Based Infrastructure:** By utilizing cloud-based infrastructure, the platform can dynamically allocate resources to handle increased traffic and transactions, ensuring smooth performance even as the user base expands.
- **Layer 2 Solutions:** Integration of Layer 2 scaling solutions, such as sidechains or Plasma, will enable the platform to process a higher volume of transactions with lower latency and reduced costs.
- **Sharding and Parallel Processing:** Implementing sharding techniques and parallel processing will further enhance the platform's ability to manage large numbers of users and campaigns simultaneously.
- **Global Node Network:** A distributed network of nodes across various geographic locations will ensure that the platform remains robust and efficient, even under heavy load.

Chapter 7

Conclusion

This project addresses the critical challenges faced by traditional crowdfunding platforms, particularly the lack of transparency, high transaction costs, and limited access for underserved communities. By developing a decentralized crowdfunding platform based on blockchain technology, we propose a solution that enhances transparency, reduces costs, and broadens access to capital on a global scale.

The proposed platform leverages smart contracts to automate and secure transactions, ensuring that all parties can engage in crowdfunding activities with confidence and minimal risk. With the integration of a robust user interface and comprehensive security measures, the platform is designed to offer a seamless and secure experience for both project creators and investors.

The expected outcomes of this project include a transformative impact on the crowdfunding industry by fostering greater trust, lowering costs, and enabling global participation. The platform's scalable architecture ensures that it can grow to accommodate increasing demand, further extending its reach and utility.

Looking ahead, potential future enhancements could involve integrating advanced analytics to provide insights into campaign performance, developing AI-driven recommendation systems for investors, and exploring additional Layer 2 solutions to further optimize transaction processing. Further research could focus on the long-term sustainability of decentralized crowdfunding models and their broader economic implications.

In conclusion, this project lays the foundation for a new era of crowdfunding, one that is more transparent, equitable, and accessible, paving the way for innovation and growth in the industry.

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