Quadratic Funding to Maintain Charity Grant and Securing Transaction Through Block Chain

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Abstract —*Charitable donations have been on the rise in recent years this is due to the fact that people have become more empathetic and voracious in contributing to society generously. Most of these individuals that are hesitant to donate to Charities and charities describe that the problem is trust-based. These individuals have a lack of trust in these organizations in the way the funds will be handled when donated. Therefore, a number of researches on the topic of transparent transactions of the donated money in a non-profit organization have been performed but have not achieved the desired goals efficiently. It has been noticed that most of the approaches have been identified to effectively address the trust issues but have not been able to provide an effective solution for the purpose of achieving the accurate division of the funds from a donor to the respective charity. There have been several implementations that have not incorporated both the use of effective segregation of funds based on the corporation as well as the implementation of accountability and transparency into the Donation approach. Therefore, for this purpose this research work details an effective approach which utilizes Quadratic Funding and Blockchain to achieve the Charity management system. The approach has achieved respectable outcomes for the experimental evaluation.*

Keywords— Quadratic Funding, Matching Pool, Distributed Block chain Ledger, Charity Management.

I. INTRODUCTION

In society, some individuals such as orphans, disabled, and mentally challenged people are unable to take care of themselves due to financial and physical limitations. These individuals often struggle to live a normal life and depend on support from charitable organizations and NGOs. These organizations work to improve their lives by providing financial assistance, food, clothes, education materials, and other essential services. Since NGOs are non-profit organizations, they rely on donations from individuals and other contributors to continue their work and support those in need.

However, many donors are concerned about whether their donations are being used properly. Therefore, there is a need for a reliable and transparent system to track donations and ensure that funds reach the intended beneficiaries. An effective solution is required to securely manage donation transactions and fairly distribute funds among multiple organizations.

II. LITERATURE REVIEW

Quadratic Funding (QF) was introduced by Vitalik Buterin, Zoë Hitzig, and E. Glen Weyl as a new way to fund public projects in a way that truly represents the community. Unlike traditional funding systems, where a few large donors can decide which projects get the most money, QF values the support of many smaller contributors. The more people who back a project, the more matching funds it receives. This encourages participation from everyone, not just wealthy donors, and ensures that projects which have widespread community interest are prioritized. It is a democratic approach because it allows the voices of many individuals to have a real impact, making the funding process fairer and more aligned with what the community actually wants

Integrating blockchain technology with QF adds an extra layer of safety and transparency to the funding process. Blockchain works as a decentralized ledger that records every transaction permanently, meaning no one can alter or tamper with the data. This makes it easy for anyone to check how funds are used, which increases trust among donors and project owners. Additionally, smart contracts can automate key parts of the process, such as collecting donations, calculating matching funds, and distributing money to projects. This reduces the need for manual oversight, minimizes human errors, and protects against fraud or misuse of funds. By combining blockchain with QF, the funding process becomes more reliable, accountable, and transparent.

III. PROPOSED SYSTEM

In recent years, there has been a growing interest in charitable donations to support underprivileged individuals such as orphans, disabled persons, and those who cannot support themselves. While many NGOs and charitable organizations work to help these individuals, there are major issues with transparency, trust, and fair distribution of funds. Donors are often unsure whether their contributions are being used properly, and some organizations receive much more funding than others, regardless of need. Traditional donation systems lack an efficient, fair, and transparent way to manage and track how money is collected and spent.

To address this, there is a need for a system that ensures:

1. Accountability in how donations are used.
2. Fair distribution of funds to organizations that need it most.
3. Trust and transparency for donors.
This can be achieved by using:
1. Quadratic Funding, which gives more value to small donations from many people, encouraging community support.
2. A Matching Partner Pool, where sponsors add to public donations to increase their impact.
3. A Blockchain Framework to securely record and track all transactions in a tamper-proof way.
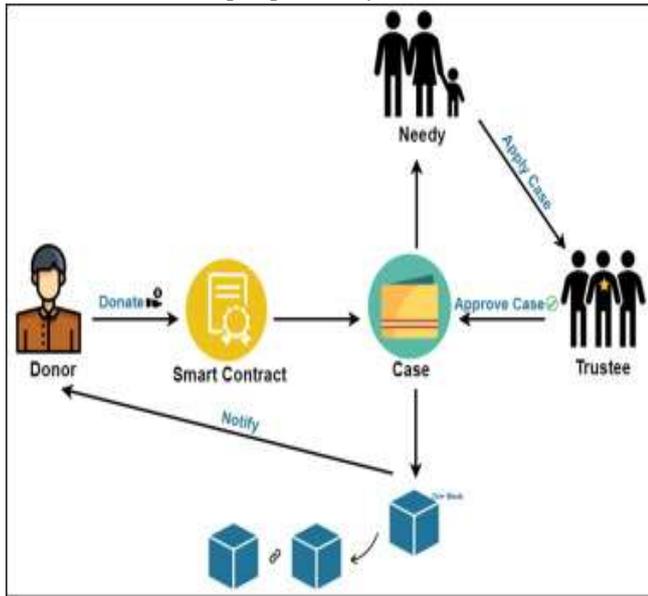

Fig. Architecture Diagram

IV. IMPLEMENTATION

1. **Controller:**
The Admin acts as the main controller of the system. The admin manages the entire charity platform, verifies users and organizations, monitors donations, and ensures that the funds are distributed properly to the beneficiaries. The admin also maintains records of donors, charities, and transactions.

2. **Donor Registration and Login :**
Donors register on the system by providing their basic information such as name, email, and contact details. After successful registration, donors can log in securely to access the platform and view available charity campaigns or organizations.

3. **Charity Organization Module :**
Charity organizations register on the system to receive donations. The system verifies these organizations before allowing them to collect funds. This ensures that donations are given to trusted and genuine organizations.

4. **Donation Processing :**
Donors can choose a charity or cause and donate money through the system. The donation details are recorded in the database, including donor information, donation amount, and transaction details. This helps in maintaining transparency in the donation process.

5. **Database and Record Management :**
All information such as donor details, charity organization details, and donation records are stored in a database. This allows easy management, retrieval, and tracking of all transactions in the system.

6. **Monitoring and Reporting :**

The system provides reports of donations and fund distribution. Admin and organizations can monitor how much money has been donated and how it is being used. This improves transparency and builds trust between donors and organizations.

7. **Outcome :**
The Grant Money Charity System makes the donation process simple, transparent, and efficient. It helps donors contribute easily and ensures that funds reach the needy people through verified organizations. The system reduces manual work, improves trust, and encourages more people to participate in charity activities.

V. ALGORITHM

a.   Start the system.

b.   Display the home page of the charity donation system.

c.   User selects **Register** or **Login** option.

d.   If the user is new, enter registration details and store them in the database.

e.   User logs into the system using username and password.

f.   System verifies the login details from the database.

g.   If login is successful, display the user dashboard.

h.   User views available charity organizations or donation campaigns.

i.   User selects a charity and enters the donation amount.

j.   System processes the donation and records the transaction in the database.

k.   Admin monitors and manages donation records.

l.   Charity organizations receive funds and update the usage details.

m.   System generates reports for transparency and record keeping.

n.   User logs out from the system.

o.   Stop the system.

VI. SOFTWARE ARCHITECTURE

The project requires a Core i5/i7 processor, 8 GB RAM, and 500 GB hard disk for smooth operation of the system. These hardware components help in efficient processing, faster data handling, and proper storage of donation records and user information.
For software, the project uses Java programming language for developing the application. JDK 1.8 is used for program development. The front end is created using Java Swing, which provides a user-friendly interface for donors and administrators. The project is developed using NetBeans 8.2 IDE, which helps in coding, debugging, and running the application smoothly. A database system is also used to store details of donors, charity organizations, and donation transactions securely.

This hardware and software combination ensures that the Grant Money Charity System works efficiently, manages donation data properly, and provides a reliable platform for online charity management.

VII. APPLICATION WITH REAL-LIFE EXAMPLE

a.   Online Charity Donations

This system allows people to donate money easily through an online platform.

Example: A donor can log into the system and donate money to support education or healthcare for needy people.

b.   Use by Charity Organizations

Charity organizations can use the system to collect and manage donations from donors.

Example: An NGO can create a campaign for helping poor students and receive donations through the platform.

c.   Transparent Fund Management

The system keeps records of all donation transactions, which increases transparency.

Example: Donors can view how much money has been collected and how it is used by the organization.

d.   Easy Monitoring by Admin

Farmers can know what is happening in their fields from any location.

Example: The admin checks donation records and ensures the funds are sent to the correct beneficiaries.

e.   Support for Social Welfare Activities

The system helps in supporting various social welfare activities such as education, health care, and disaster relief.

Example: During natural disasters, people can donate quickly through the system to help affected communities.

VIII. FUTURE SCOPE

The Grant Money Charity System can be further enhanced to provide more transparency and efficiency in managing donations. Advanced technologies such as secure online payment gateways and data analytics can help track donations more accurately and improve fund management. Integration with mobile applications and cloud-based systems can allow donors and organizations to access the platform from anywhere in real time. In the future, features like AI-based recommendation systems can suggest suitable charity campaigns to donors based on their interests. These improvements can transform the system into a fully automated and reliable digital charity platform, increasing public trust, encouraging more donations, and supporting social welfare activities more effectively.

IX. RESULTS AND DISCUSSION

The system was tested by performing different operations such as user registration, login, and donation processing. The system successfully stored donor details and donation records in the database. When a donor made a donation, the system recorded the transaction correctly and updated the donation details. The admin was able to monitor donor information and manage charity records easily. The system worked smoothly and provided a simple interface for users to donate money online. It helped improve transparency in charity activities, reduced manual work, and allowed organizations to manage funds more efficiently

X. CONCLUSION

Farmers Many people in society need financial help for education, healthcare, and basic needs. However, traditional charity systems often lack transparency and proper

management of donation records. In this project, a Grant Money Charity System is developed to make the donation process simple, transparent, and efficient.

The system allows donors to register, log in, and donate money to charity organizations through an online platform. All donation details are stored in a database so that records can be maintained properly. The admin manages users, verifies organizations, and monitors the donation process.

The system works in a secure and organized way, helping donors contribute easily while ensuring that the funds reach the needy people through trusted organizations. It reduces manual work, improves transparency, and encourages more people to participate in charity activities. This project helps in managing donations efficiently and supporting social welfare activities.

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