A Transparent and Trustable Approach for Donation Fund Tracing using Blockchain Techology

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Abstract—**Charity Fund plays an important role in fighting calamity faced by human beings. However, there is not a widely adopted charity fund tracing system in China. This paper researches on currently used donation systems concluded on the traceability of charity fund as the pain points of the industry. This trustable and transparent donation system is promising but requires the support of governments.**

Index Terms—**Blockchain, Charity, Fund, Trace**

I. Introduction

Along with the spread of CovID-19, an increasing amount of charitable supplies have been donated and devoted to helping people in need and the World Health Organization is raising 1.7 billion in fighting this disease [1]. Blockchain is a public traceable ledger, bringing the trust between different social entities[2]. However, there is not a widely accepted platform for tracing the donation fund in China. Therefore, this paper will firstly demonstrate the current donation platform and blockchain-based donation trace platform with their strength and weakness. Additionally, a newly proposed transparent donation trace platform is demonstrated with web-based applications. Finally, evaluation and a further conclusion are conducted for future research.

II. Literature Review

There are ordinary donation platform (Figure 1), blockchain based donation platform (Figure 2) in the charity market.
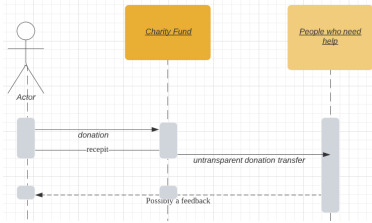
A. Ordinary Donation Platform

Fig. 1: Ordinary Donation Sequence

The ordinary donation system requires the donor to donate first, then the chariy fund give back the receipt to the user. Additionally, the charity fund transfer the fund to the people in need without notification to the user, eventually, the people who receive the charity fund may send back a thanks letter in expressing the thanks for the donor. The problem of this system lays on the nontransparent circulation of between the charity fund and people in need.

TABLE I: Comparasion between ordinary platforms

	advantages	disadvantages
Tecent Charity	straight logic for donation	no donation reference page
Red Cross	directly donation to the red cross	limited donation proviences
Drop Raise	touching stories	do not know the trace of fund

Based on the comparison of three ordinary platform, even though there is a donation reference, which serves to be receipt of your donation, there is not a donation trace platform, which is capable of donation tracing between different donation entity [3],[4],[5].

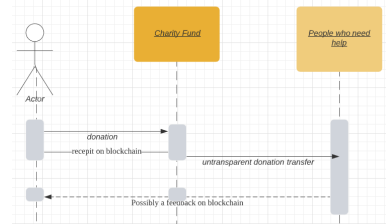### B. Current Blockchain Based Donation Platform (Figure 2)

Fig. 2: Current Blockchain Based Donation Platform

The current blockchain-based donation platform only transfers the receipt and thanks letter on the blockchain, the user can only be sure about the fact that his or her donation is indeed donated with universal acknowledgment. However, users do want to see the circulation of the charity fund, rather than the donation behavior made by him or herself, because he or she is sure about this fact.

TABLE II: comparison between blockchain based donation platform

	advantage	disadvantage
Charity On Chain	backed up by Alibaba	back and front end do not match
Heart Chain	brief website	only two projects are alive
Shanzong	backed up by Xiongan Group	only donation info on chain

It is deduced from the table II that all the blockchain-based donation platform only record the donation information on the chain, rather the donation tracing information [6], [7], [8].

III. METHODOLOGY

This is a blockchain network consisting of donors, charity foundations, donation transit nodes, donation receiving institutions. Blockchain serves to be a public, transparent, untamable ledger used for marking the circulation of donation deposits (Figure 3).
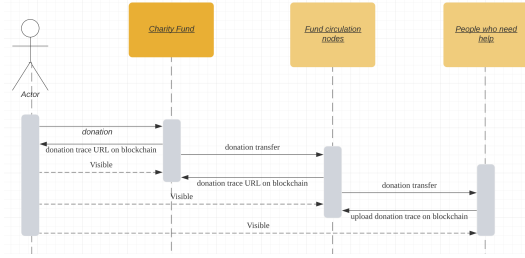

Fig. 3: New transparent Donation Trace Platfrom

In this system, regardless of whether the circulation node lay in the same organization, nor whether they have heard the terminology of blockchain. These organizations not only take the charity fund as they have done previously but also takes the responsibility for documenting the trace of charity fund on the service provided by this platform. Using this trustable ledger, the donor is visible to the donation fund across the full life cycle.

IV. DEMONSTRATION

A web based application is proposed for demonstrate this newly proposed transparent donation trace system, consisting of the homepage (Figure 4), info uploading page (Figure 5), blockchain reference page (Figure 6), and user reference page (Figure 7). The website URL is $http$: $//39.106.45.186/city/bj/$

Fig. 4: Homepage

Fig. 5: Transit Node Upload Page

Fig. 6: Info on the chain

Fig. 7: User reference URL

On the homepage, the user may evaluate the check their funded project using the search bar or the navigation channel on the bottom of the page (Figure 4). Additionally, the transit node may upload the next stage of the fund, provided with available Internet access (Figure 5). Throughout this user interface, the information is uploaded on the blockchain network with the reference available at the front end, showing the previous node along with this circulation (Figure 6). Finally, the user may access this node using the user reference URL (Figure 7).

V. EVALUATION

Even though users easily trace charity funds, the customer is mainly governments in charge of the charity fund. However, governmental applications require a higher software development standard, since it has access to sensitive financial data. Currently, the application design team is not capable of developing governmental software.

VI. CONCLUSION

In conclusion, this is a user-friendly donation tracing platform. In the future, combined with smart contract, and easier info uploading software systems together with hardware facilities, the traceability, and management of charity funds will be more visible to the public, and more people will donate based on this platform.

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