FITE4801 Final Year Project

A Blockchain Payment System in Enhancing Hong Kong Philanthropy Transparency

Detailed Project Plan

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1. Background

Charitable organizations in Hong Kong face challenges related to transparency and accountability due to a lack of clear reporting and governance frameworks, eroding public trust. This project seeks to leverage blockchain, increase transparency, and rebuild trust to create a more accountable philanthropic ecosystem in Hong Kong.

1.1 Challenges in Hong Kong Philanthropy

Charitable organisations play a very important role in Hong Kong's social fabric, supporting causes such as healthcare, education and poverty alleviation. It is therefore understandable that the public is interested in how the funds are run and governed. However, the philanthropic landscape is marred by significant challenges that hinder the sector's effectiveness and transparency. Charities often struggle to provide donors with clear visibility into how their contributions are utilized, leading to doubts about the impact of their donations. Moreover, the lack of a compulsory regulatory and reporting framework for tax-exempted charities, we often see a hidden financial reporting in the charities and raising public concerns for the transparency issue in charity funding [1]. For instance, the Hong Kong Society for the Protection of Children were reported of spending 76% of the total staff salary expenses, and only 2.43% of the annual income spent on children's welfare. This lack of accountability not only erodes donor trust but also undermines the credibility of charitable organizations in Hong Kong [2].

1.2 Blockchain in philanthropy

The introduction of blockchain technology has presented a viable answer to theissues, revolutionizing philanthropy and enabling it to be more open and effective. The four fundamental characteristics of blockchain are transparency, immutability, security, and decentralization brings potential for changing the charity sector [3]. Through blockchain's decentralized nature and cryptographic security, donors can trace their contributions in real time, ensuring that their funds are used as intended. Smart contracts can automate donation processes, triggering fund disbursement only when predefined conditions are met, thereby safeguarding donations and enhancing accountability [4]. By utilizing blockchain technology as a tool for financial transparency and trust-building, charities in Hong Kong can not only protect donor interests but also instill confidence in the integrity of their operations, fostering a more robust and sustainable philanthropic ecosystem in the region.

1.3 Motivations of the project

The lack of transparency in the donation process and the distribution of funds creates an atmosphere of scepticism amongst donors, resulting in a loss of trust in charitable organisations. This lack of trust subsequently leads to a reduction in the funds available to charities, making it impossible for them to effectively fulfil their mission and have a significant impact on the community. In the face of these challenges, this project aims to change the traditional

mechanisms of charitable giving, increase donor confidence and pave the way for a more transparent and accountable charitable system in the region.

2. Objective

In this project, we aim to propose a blockchain-based system for local charities in Hong Kong, enhancing transparency, accountability, and trust in charitable contributions.

2.1 Blockchain Framework for Real-Time Donation Tracking

Develop a comprehensive blockchain framework that enables real-time tracking of donations. This system will provide transparency, allowing donors to see exactly where their funds are allocated. Each donation will be recorded on the blockchain, enabling donors to verify the usage of their donations to specific charities or projects. Charities will provide publicly known wallet addresses of designated merchants or organisations, allowing donors to check if their donations reach the intended recipients.

2.2 Digital Signature for Transaction Accountability

Implement a digital signature mechanism that authenticates authorized personnel involved in the transaction process. Only designated individuals can approve fund transfers, reducing the risk of unauthorized transactions. Digital signatures will create an audit trail for each transaction, making it easier to track the person who authorized the transation. In case of discrepancies, the digital signature will help identify responsible parties, ensuring accountability for fund management.

2.3 User Experience and User Interface Design

Create an intuitive user experience and user interface that simplifies the donation process for users. The interface will allow donors to easily navigate the platform, track their donations, and access information about transaction histories and accountability. A dashboard for real-time donation tracking would display the status of their contributions and how funds are being utilized. The interface will provide straightforward access to essential information about transaction accountability, including details on authorized personnel. The design will ensure that donors can easily navigate the platform, enhancing engagement and encouraging repeated donations. By prioritizing user experience, we aim to encourage more individuals to engage with and support local charities.

2.4 Evaluate System Effectiveness

Conduct a thorough evaluation of the blockchain system's impact on transparency, accountability, and trust within the charity sector. We plan to develop and distribute questionnaires to gather insights from donors and related stakeholders regarding their experiences and perceptions of the system. Through analyzing the feedback, we would determine whether the blockchain implementation effectively addresses trust issues and encourages more donations. Using the evaluation results, we would identify areas for enhancement in the system, ensuring it meets the evolving needs of charities and donors.

3. Methodology

This project will be implemented in three stages. The first stage involves a comprehensive literature review on current blockchain research to understand the technicals behind. The second stage will be distributing questionnaires to understand the donor's concern and opinion on blockchain charitable giving. The last stage will be designing the prototype of payment flow using blockchain, focusing on conceptualizing the design and ensuring transaction accountability.

3.1 Literature Review

This project will start with conducting literature review on current research in blockchain technology and analyze the advantages and disadvantages of the solutions. We will also evaluate case studies to understand the impact of blockchain on transparency, accountability, and donor trust in charitable organizations. We aim to synthesize key findings from the resources to inform the project's approach and identify potential challenges and opportunities in integrating blockchain technology in Hong Kong charities payment.

3.2 Questionnaire

We will distribute a designed questionnaire to participants. Our target participants would be Hong Kong residents aged 18 to 60 while the expected number of feedback given is 100 or above. We will take into account of People with different educational backgrounds and living standards to give quantitative and qualitative data on donor preferences, concerns, and attitudes toward blockchain technology in charitable giving.

3.3 Design and Prototyping

After collecting data and gaining a comprehensive understanding of the technical aspects involved, the project will transition into the phase of prototyping the payment flow utilizing blockchain technology. This phase involves conceptualizing the design, defining the technical architecture, and developing an interface enabling donors to track donations and identify transaction accountability. The development of the prototype will integrate insights from research, and test run our prototype for feedback to drive iterations for usability and security enhancements and aim to foster transparency and accountability in the philanthropic sector of Hong Kong.

4. Schedule and Milestones

Stage	Period	Deliverables and Milestones
Phase 1: Inception	Aug - Sep	- Research on local charity issues and blockchain tracking system - Work on detailed project plan - Set up project webpage
	1 Oct	**Deliverables of Phase 1** - Detailed project plan - Project webpage
Phase 2: Elaboration	Oct 2 - Oct 31, 2024	- Research on blockchain technology, digital signature and charity operations
	Nov 1 - Nov 11, 2024	- Design questionnaires for feedback collection
	Nov 12 - Jan 12	- Work on framework and user interface
	Jan 13-17, 2025	First presentation
	Jan 18 - Jan 25, 2025	- Revise project plan based on feedback
	Jan 26, 2025	**Deliverables of Phase 2** - Preliminary implementation - Detailed interim report
Phase 3: Construction	Feb 1 - Feb 15, 2025	- Develop the digital signature mechanism
	Feb 16 - Feb 28, 2025	- Develop user interface design and initial prototype
	Mar 1 - Mar 15, 2025	- Distribute questionnaires to potential donors and stakeholders
	Mar 16 - Mar 31, 2025	- Collect feedback on the blockchain system and user interface
	Apr 1 - Apr 15, 2025	- Analyze feedback and make necessary adjustments to the system
	Apr 21, 2025	**Deliverables of Phase 3** - Finalized tested implementation - Final report
	Apr 22-26, 2025	Final presentation
	Apr 30, 2025	Project Exhibition

References

1. Charity governance in Hong Kong | CGJ HKCGI. (n.d.). Retrieved from https://cgj.hkcgi.org.hk/charity-governance-hong-kong
2. 陳仕娜. (2022, February 7). 害群之馬 一宗醜聞賠掉NGO公信力|陳仕娜. 香港*01*. Retrieved from https://www.hk01.com
3. Ahmed, I., Fumimoto, K., Nakano, T., & Tran, T. H. (2023). Blockchain-Empowered Decentralized Philanthropic Charity for Social Good. *Sustainability*, *16*(1), 210. https://doi.org/10.3390/su16010210
4. Giving Compass. (2020, September 7). What blockchain could mean for philanthropy. Retrieved from https://givingcompass.org/article/what-blockchain-could-mean-for-philanthropy