FYP24097

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A Blockchain Payment System in Enhancing Hong Kong Philanthropy Transparency

FYP Final Presentation

Supervised by Prof. Yiu Siu Ming

2nd May 2025

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- Challenges

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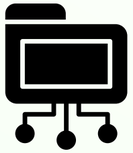
APPENDIX

Background & Motivation

- Hong Kong philanthropy market has a total of **13bil of donations** per year with over 10,000 charities
- **Lack of regulation** and **transparency** in Hong Kong

No government regulatory body on charities



No compulsory reporting framework

No laws on regulating fund use

Scandals

Improper use of funds

Public Mistrust

Credibility Issue

Objectives

Higher degree of transparency and trust among stakeholders

Making donations traceable to all parties through blockchain system

Provide accountability for stakeholder

Inform donors the responsible individual who authorized transactions

Blockchain-based Donation System

Allow donors to monitor the use of fund → Build donor confidence → Gain visibility and build trust → **More donation**

Recap - Methodology

Literature Review

Paper	System	Stakeholders	Transparency and Accountability Features
Smart Donations: Event-Driven Conditional Donations Using Smart Contracts On The Blockchain (Trotter et al., 2020)	• Private Permissionless Ethereum Blockchain • Mobile app	• Donor • Trustees • Beneficiary • Validators	• Mobile app real-time tracking • Smart contract • Escrow system
Blockchain-based donations traceability framework (Almaghrabi & Alhogail, 2022)	• Public Permissioned Ethereum Blockchain • Web page	• Donor • Needy party • Trustee	• System grants specific functions to authenticated parties • Tracing feature reveals each case's status, donation amount, and by whom it is being managed
Smart Blockchain Networks: Revolutionizing Donation Tracking in the Web 3.0 (Nairi et al., 2024)	• Ethereum Blockchain • Web page	• Donation event owner • Donor • Validators	• Transaction ID for tracking • Smart contract • Escrow system

Proposed System

- **Public Permissioned Ethereum Blockchain**
- **Donor + Beneficiary + Charity**
- **Specific Functions**
- **Web Page Real-time Tracking**
- **Transaction ID**
- **Transaction Authorizer**

Recap - Methodology

Prototyping - System Framework

User Roles

Donor

- Browse charities and programmes
- Exchange fiat money to digital assets when donating
- Donate using smart contract template provided
- Track donation

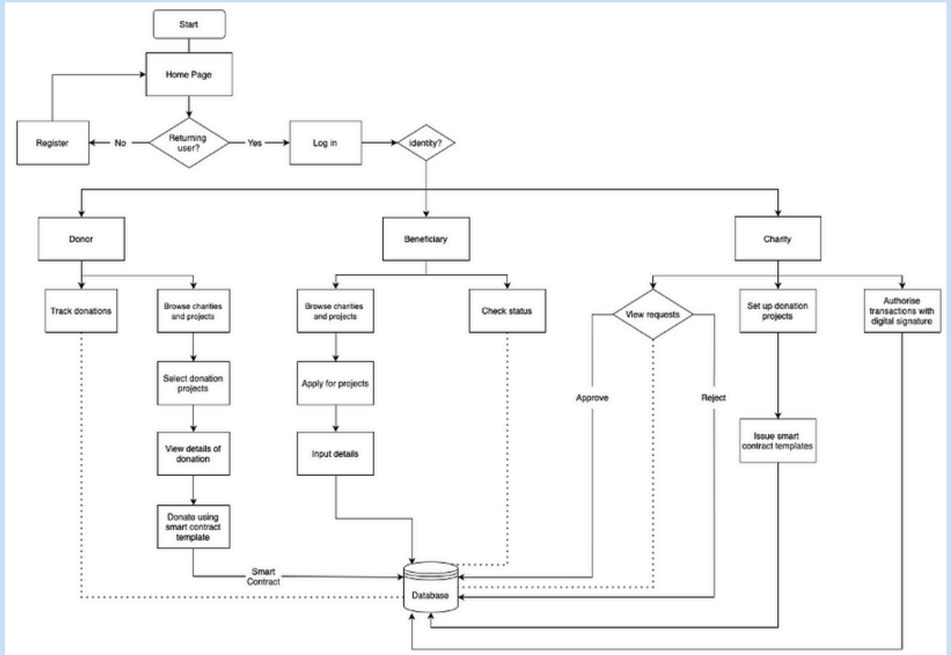
Charity

- Set up donation programmes
- Approve beneficiary applications
- Issue Smart Contract templates for donation programmes
- Track programme and monitor donations

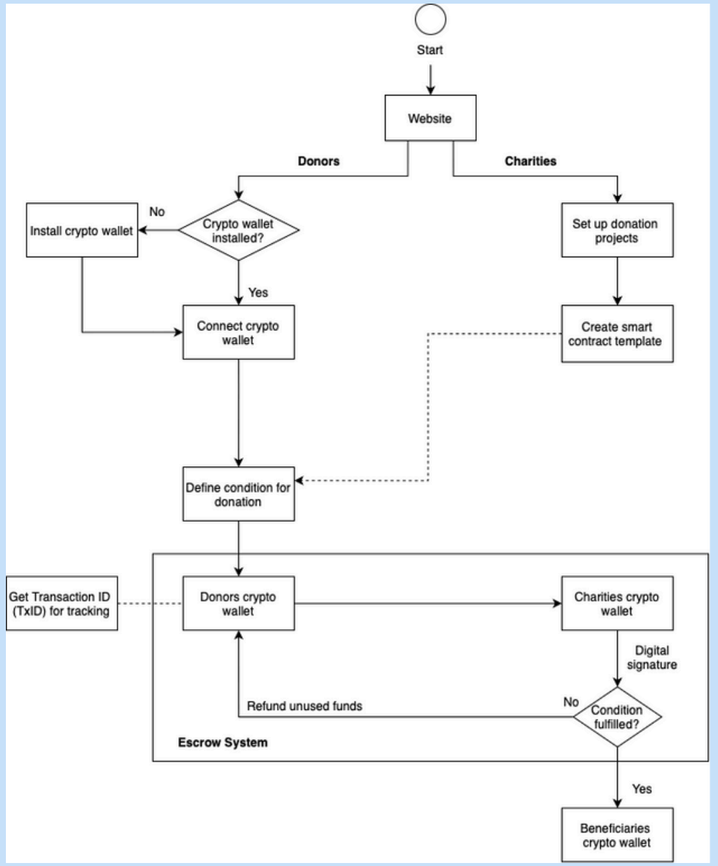
Beneficiary

- Create account
- Validate identity by uploading personal information
- Apply for program eligibility (approved by Charity)
- Check status

Front-end Flowchart



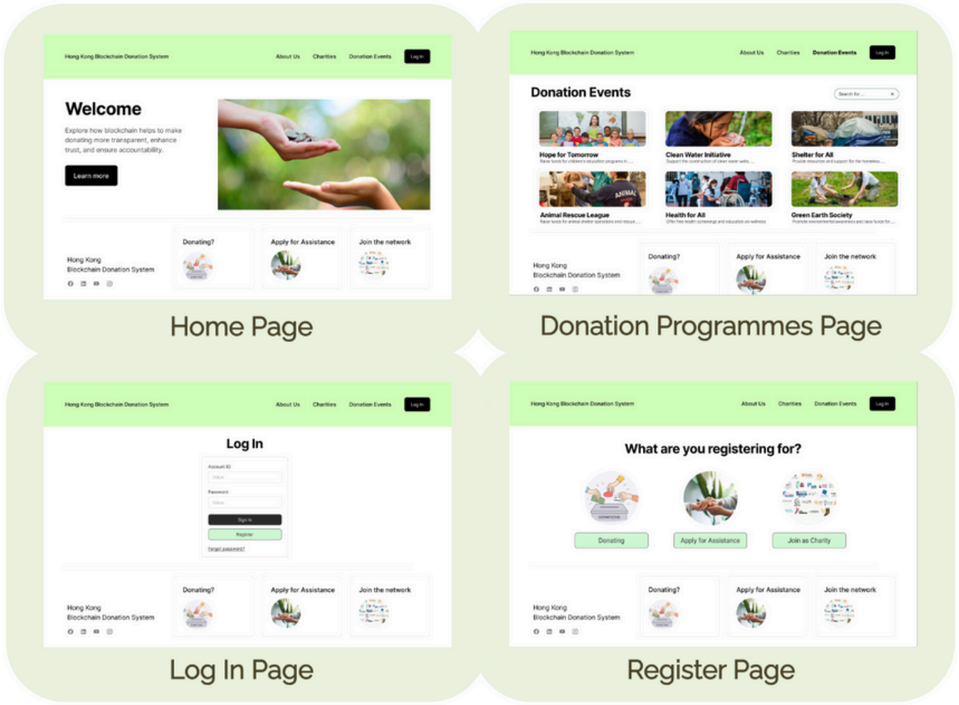
Back-end Donation Flow



Recap - Methodology

Prototyping - User Interface Design & Evaluation

User Interface



Evaluation

Questionnaire

Feedback from Hong Kong users

Bench-marking

Comparison with solutions in the market

Performance Evaluation

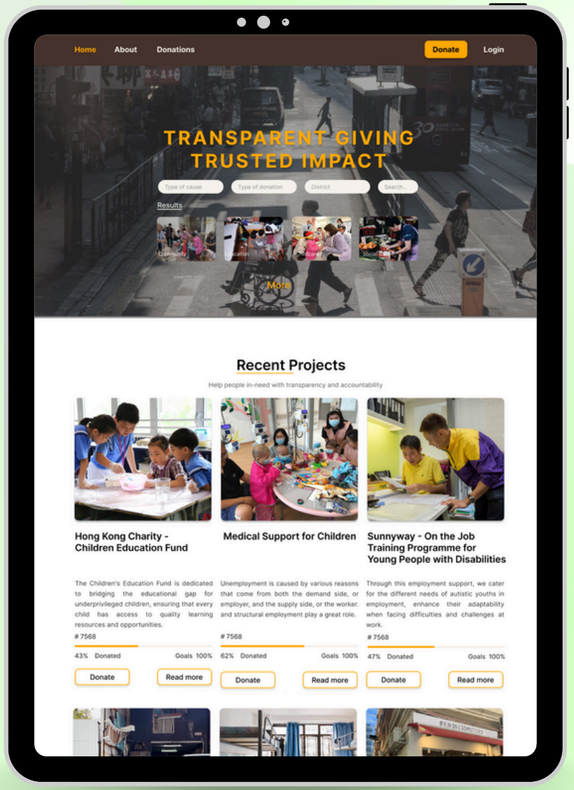
- Transparency
- Accountability
- Trust
- Immutability

Results & Findings

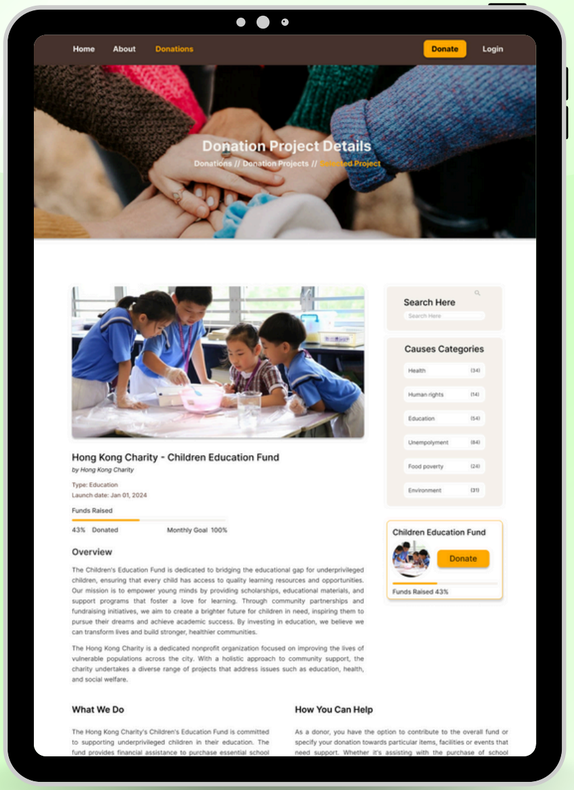
- User Interface Design (Donor)
- Demo
- Questionnaire
- Benchmarking
- Performance Evaluation
- Challenge

User Interface Design (Donor)

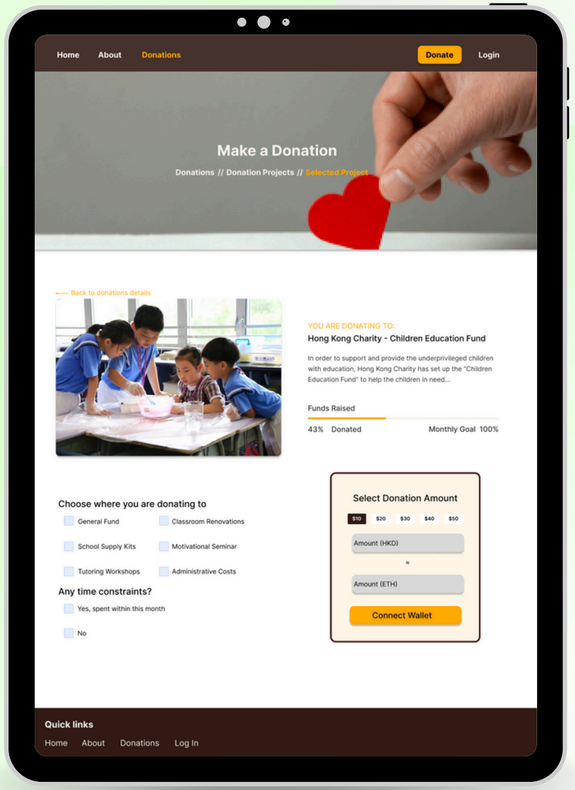
Home Page



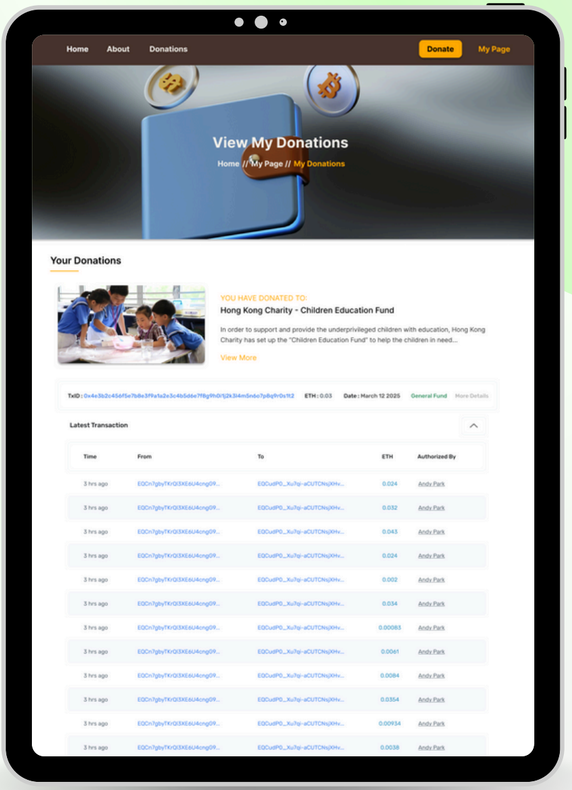
Donation Details Page



Donation Payment Page



View My Donation Page



Progress Updates & Real-time Tracking

Our Progress (Monthly)

Month 16 Month 15 Month 14 Month 13 press for more

What We Did

In the month of March 2025, we made significant strides in supporting the education of underprivileged children. We purchased over 200 school supply kits, which included textbooks, notebooks, and stationery essentials for students in need. Additionally, we organized eight tutoring workshops, benefiting 200 children and providing them with homework assistance and academic support. To enhance our learning facilities, we invested in renovating two classrooms, ensuring they are equipped with adequate furniture and resources. Our community outreach program also hosted a motivational seminar where local professionals shared their experiences and encouraged students to pursue their educational goals.

Expenses

Total amount spent: $17,200 HKD Check Spending in Graph

School Supply Kits $4,200
Transaction Authorize: Andy Park
Images Proof

Tutoring Workshops $3,100
Transaction Authorize: Andy Park
Images Proof

Classroom Renovations $7,600
Transaction Authorize: Andy Park
Images Proof

Motivational Seminar $1,200
Transaction Authorize: Andy Park
Images Proof

Administrative Costs $1,100
Transaction Authorize: Andy Park
Images Proof

Tracking Graph

Fund Raised
$20,000 HKD

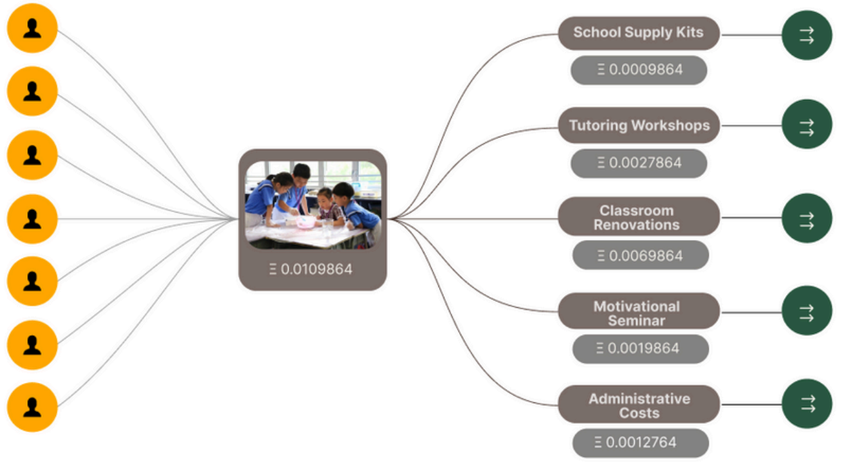
Fund Distribution:
General Fund: $6,000
School Supply Kits: $4,000
Tutoring Workshops: $1,500
Classroom Renovations: $6,000
Motivational Seminar: $800
Administrative Costs: $700

Within Current Month: $8,000
No Time Constraints: $12,000

Spent: $17,200
Returned: $1,000
Held for future use: $1,800

Total: $20,000

Tracking Graph



Transaction History

Date	Amount	Transaction	Authorize
24/3/2024	Ξ 0.0087247	EQCudP0_Xu7qi-aC	Andy Park Signature
24/3/2024	Ξ 0.0087247	EQCudP0_Xu7qi-aC	Andy Park Signature
24/3/2024	Ξ 0.0087247	EQCudP0_Xu7qi-aC	Andy Park Signature
24/3/2024	Ξ 0.0087247	EQCudP0_Xu7qi-aC	Andy Park Signature
24/3/2024	Ξ 0.0087247	EQCudP0_Xu7qi-aC	Andy Park Signature

Responsible individual for the transaction

Personal Tracking & Transaction Details

Your Donations

YOU HAVE DONATED TO:

Hong Kong Charity - Children Education Fund

In order to support and provide the underprivileged children with education, Hong Kong Charity has set up the “Children Education Fund” to help the children in need...

View More

TxID : 0x4e3b2c456f5e7b8e3f9a1a2e3c4b5d6e7f8g9h0i1j2k3l4m5n6o7p8q9r0s1t2 ETH : 0.03 Date : March 12 2025 General Fund More Details

Latest Transaction

Time	From	To	ETH	Authorized By
3 hrs ago	EQCn7gbyTKrQl3XE6U4cngG9...	EQCudP0_Xu7qi-aCUTCNsjXHv...	0.024	Andy Park
3 hrs ago	EQCn7gbyTKrQl3XE6U4cngG9...	EQCudP0_Xu7qi-aCUTCNsjXHv...	0.032	Andy Park

Ethererum Tracker

Search

Transaction Details

Transaction Hash :
e6b6d64675281f3e0e6eeb94a28da0717e77492ae7b4194ce9fbd500716aaeda

Transaction Status : Complete

Block ID : 22310696

Time Stamp : Apr-20-2025 12:05:35 PM +UTC

From : EQCudP0_Xu7qi-aCUTCNsjXHvi8PNNL3lGfq2Wcmbg2oN-Jg

To : EQCudP0_Xu7qi-aCUTCNsjXHvi8PNNL3lGfq2Wcmbg2oN-Jg

Ethereum
0.024 ETH

Transaction fee : 0.0034 ETH

Gas Price : 0.892172194 Gwei

Address	EQCudP0_Xu7qi-aCUTCNsjXHvi8PNNL3lGfq2Wcmbg2oN-Jg
Name	Hong Kong Charity - Children Education Fund
Role	Charity
Balance	1,456.97307686 ETH (≈ $4,132.31)
Last activity	3 hrs ago
Workchain ID	0
Blockchain ID	mainnet
Raw	0:AE74FD3F5EEEEA8BE68251308DB235C7BE2F0F34D2F79467EAD967266E0DA837

Demo →

Scan this to access our demo

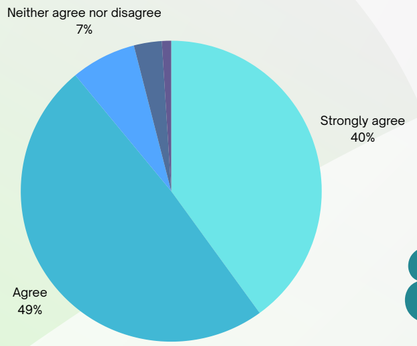
Demo (end-to-end):
https://youtu.be/PyyEB8vhufY

Demo (donation process):
https://youtu.be/Q-BytoXNCCg

Demo (interactive):
https://www.figma.com/proto/pUfy5a72iNPZme8Xbnaa2z/Donation-website--Community-?node-id=2507-271&t=9f83yGodpz7YKmE1-1&scaling=min-zoom&content-scaling=fixed&page-id=0%3A1&starting-point-node-id=2507%3A271&show-proto-sidebar=1

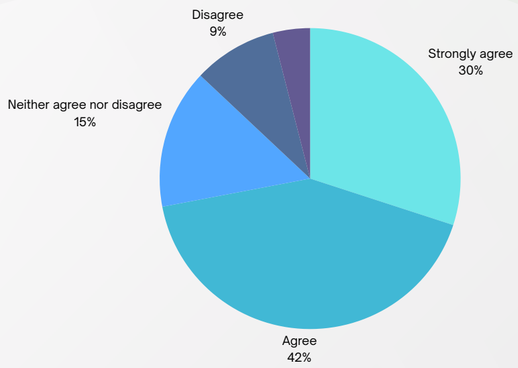
Questionnaire Key Results

- Online survey to collect feedback regarding the design and performance of our system
- 127 responses were collected from an age range of 20 to 64



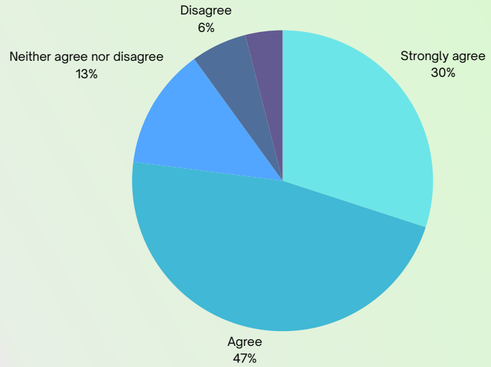
89%

Agrees that the system helps to raise transparency in Hong Kong charity donations



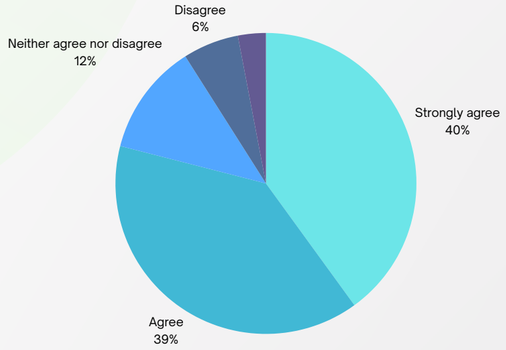
72%

Agrees that the system would enhances their trust towards Hong Kong charities



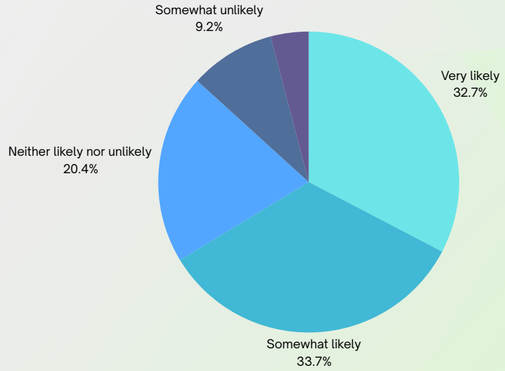
77%

Agrees that the system enhances their trust towards Hong Kong charities' use of donations



79%

Likely to support or participate in donating through a blockchain donation system



65%

Agrees that the system encourages them to donate more to Hong Kong charities

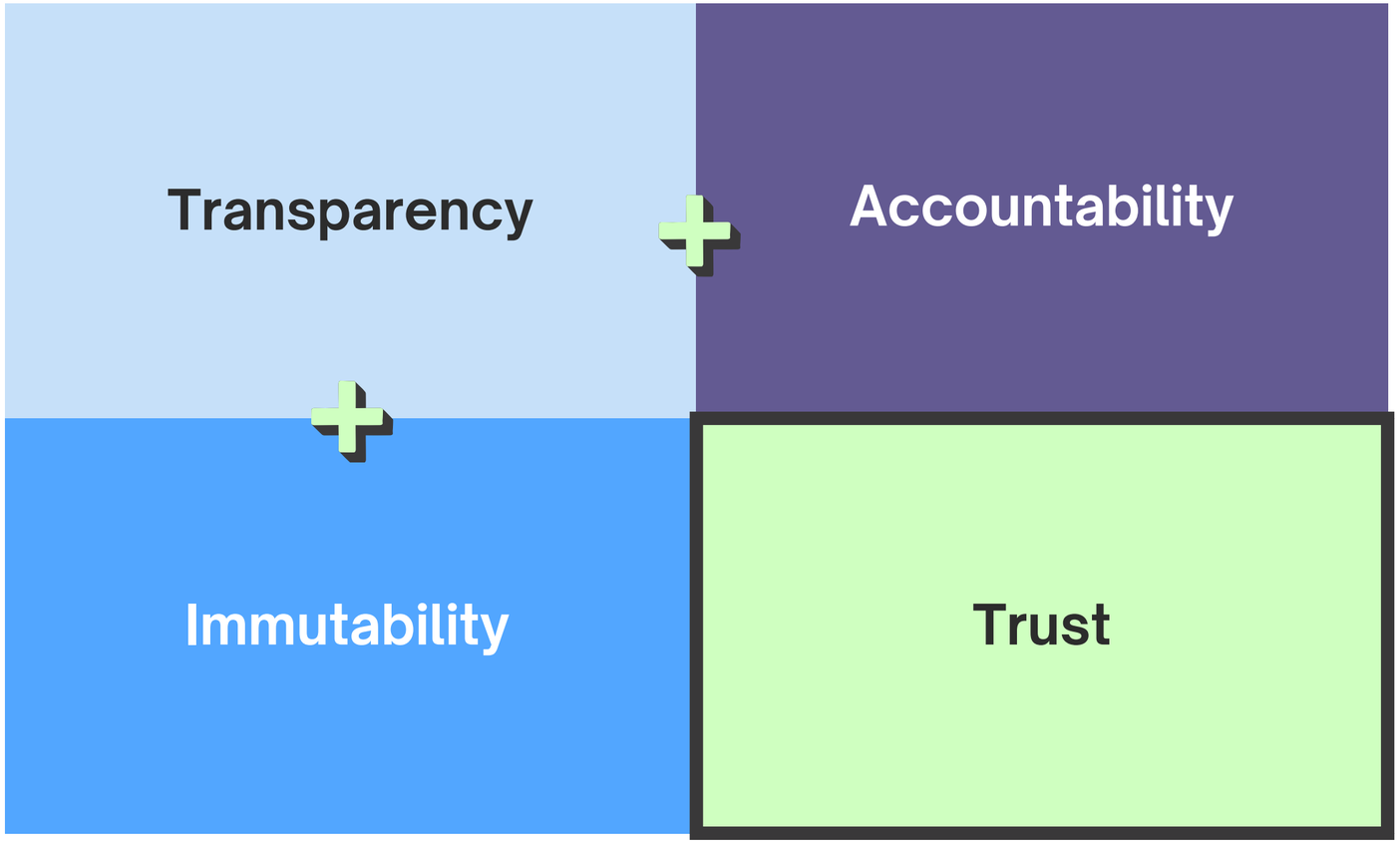
Benchmarking

Features	Binance Charity	Givetrack	Proposed System	Hong Kong charities' online platforms
Real-time tracking of donations	Yes	Yes	Yes	No
Clear display of fund movements	No	Yes	Yes	No
Transaction person in charge	No	No	Yes	No
Personal tracking graph	No	No	Yes	No
Escrow system	No	No	Yes	No
Targeted donation	No	No	Yes	No
Charity-based	No	No	Yes	Yes
Hong Kong charities and projects	No	No	Yes	Yes

Performance Evaluation

- Tracking Graph
- Progress Update
- 88.98% agree system enhances transparency

- Transactions immutable
- Cryptographic hashing



- Only authorized participants can approve transactions
- Person accountable provided

- **71.65**% and **77.17**% of respondents believe the system enhances their **trust** in Hong Kong charities their fund usage

Challenges

Blockchain Penetration

Lack of knowledge from public

Complexity of blockchain preventing people from donating

Majority of interviewees expressed support for using blockchain for donations after the demo

Hong Kong Charity Adaptability

Require considerable resources and commitment

Potential conflicts of interest

Communicating with local charities and considering their feedback to adjust the system

Regulatory Constraints

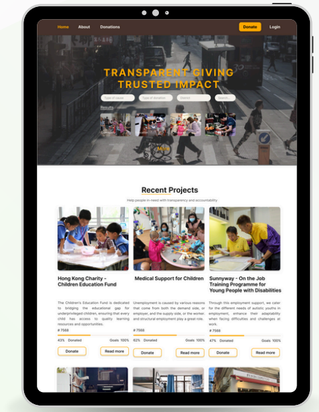
Lack of clear regulatory framework on blockchain

Uncertain whether the system's setup is up to industry standards

Chief Executive’s 2024 Policy Address unveiled its plan for adopting blockchain technology

Next Steps →

Integrating the system into real-life applications



FOOD ANGEL 惜食堂
by Bo Charity Foundation

Crossroads Foundation 國際十字路會

Feeding Hong Kong 樂餉社

variety the children's charity 維樂天

1. Beneficiaries & Charities: User Interface and Feedback
2. Mobile apps & device compatibility
3. Community engagement features

Transparency

Accountability

Trust

Blockchain-based Donation System

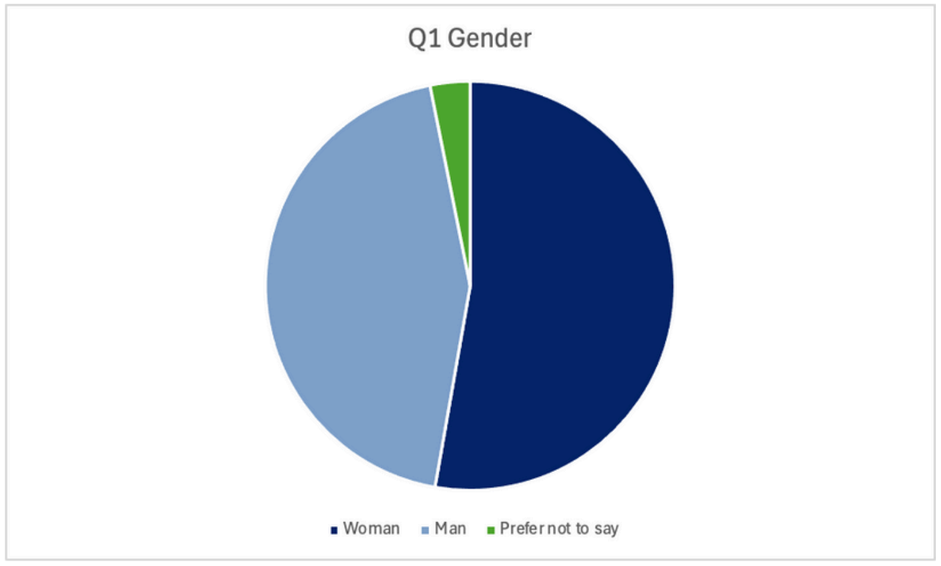
For Hong Kong Charities

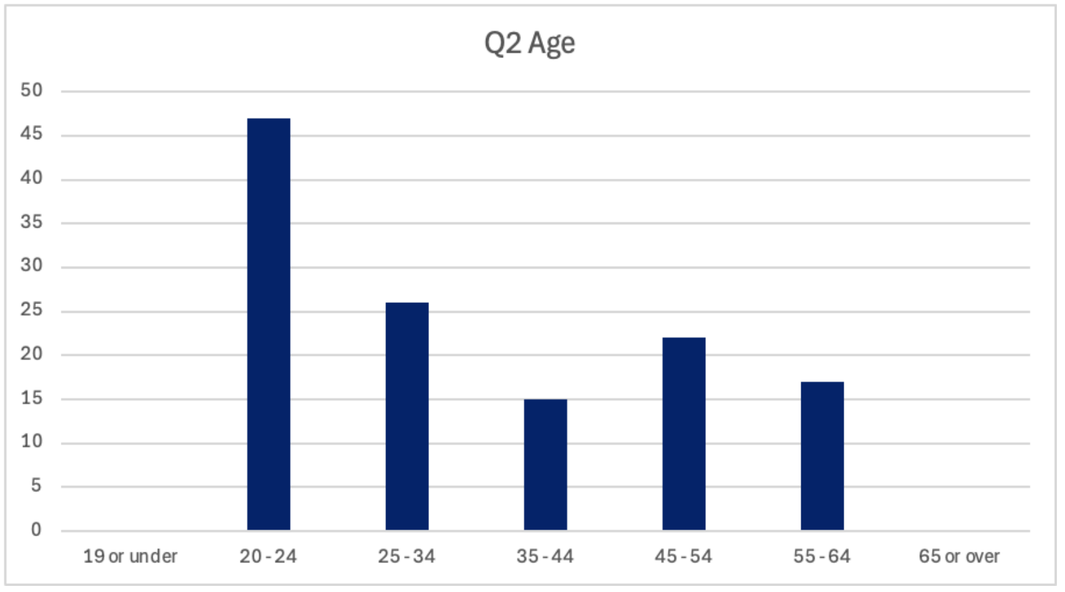
FYP24097

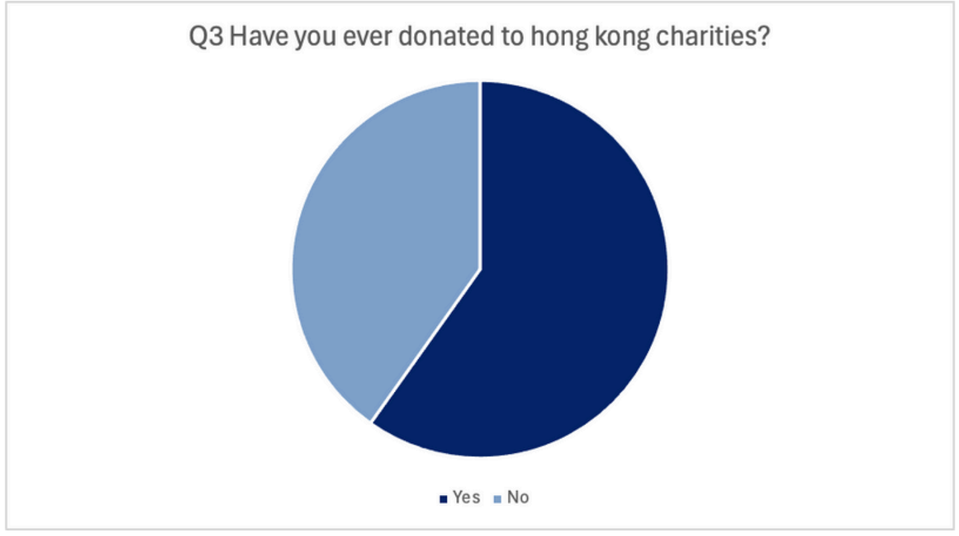
A Blockchain Payment System in Enhancing Hong Kong Philanthropy Transparency

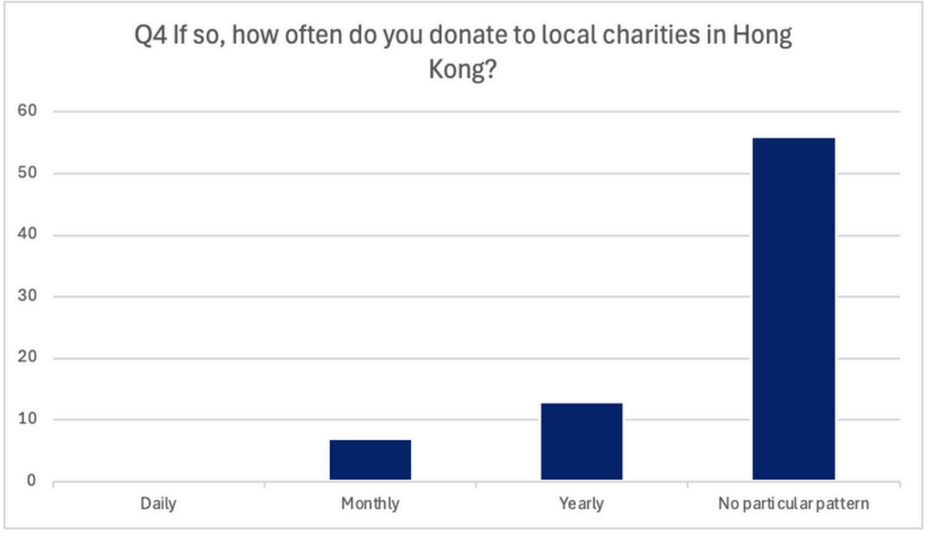
Thank You!

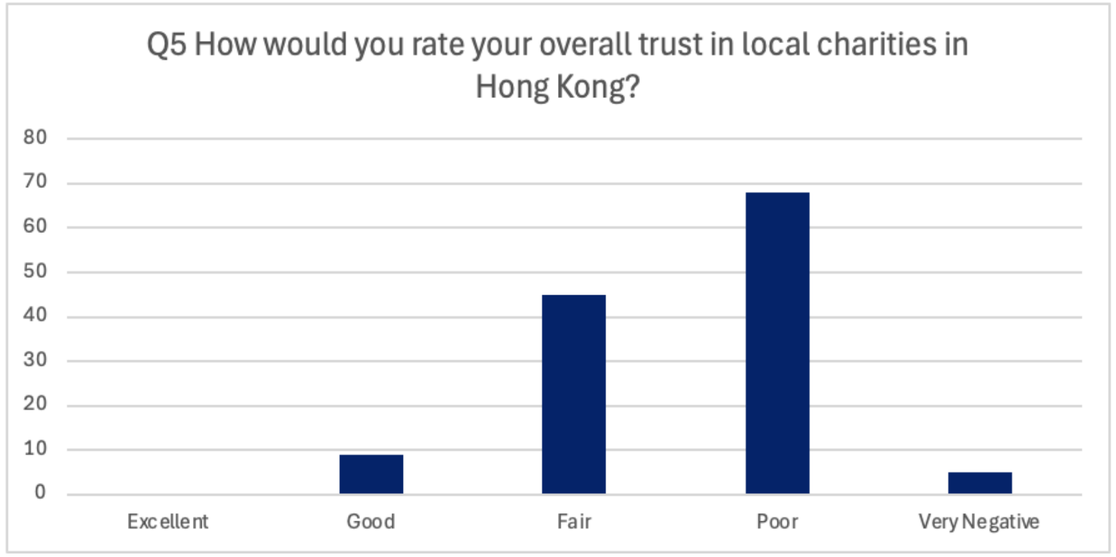
Appendix

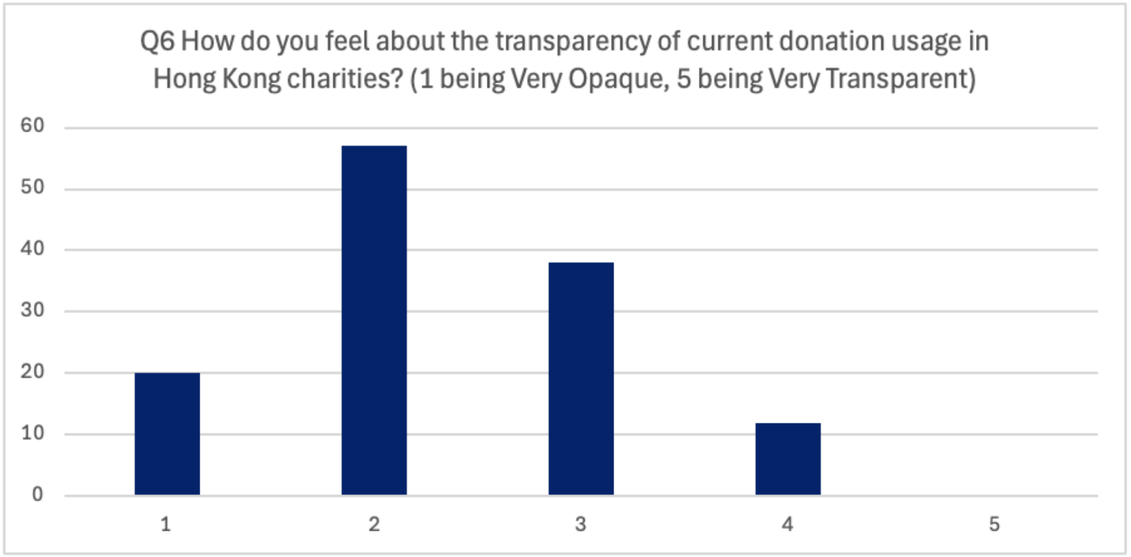

Q1 Gender
Woman
Man
Prefer not to say

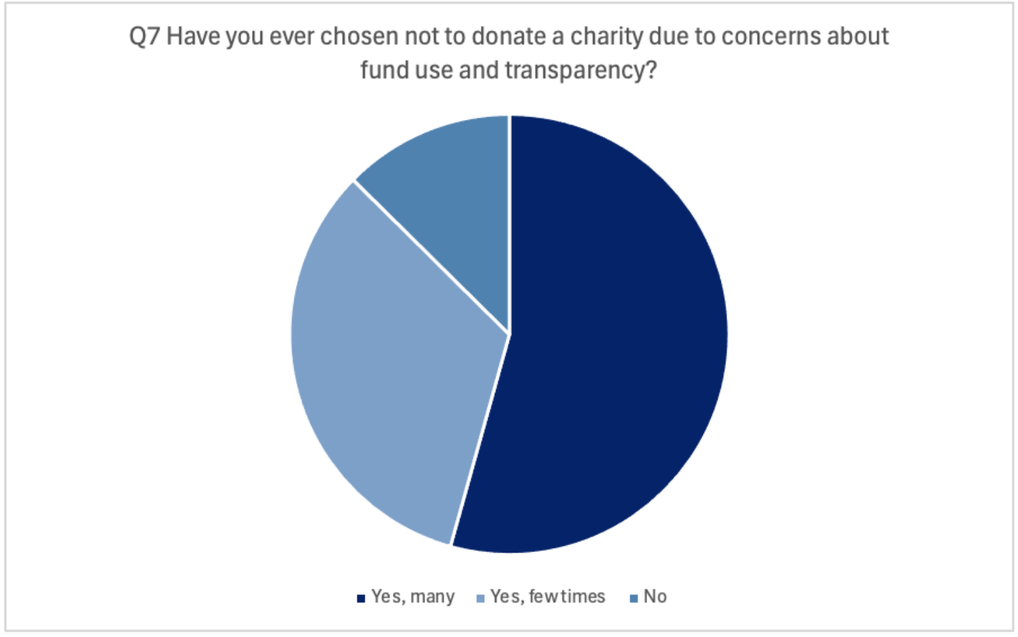

Q2 Age
50
45
40
35
30
25
20
15
10
5
0
19 or under
20 - 24
25 - 34
35 - 44
45 - 54
55 - 64
65 or over

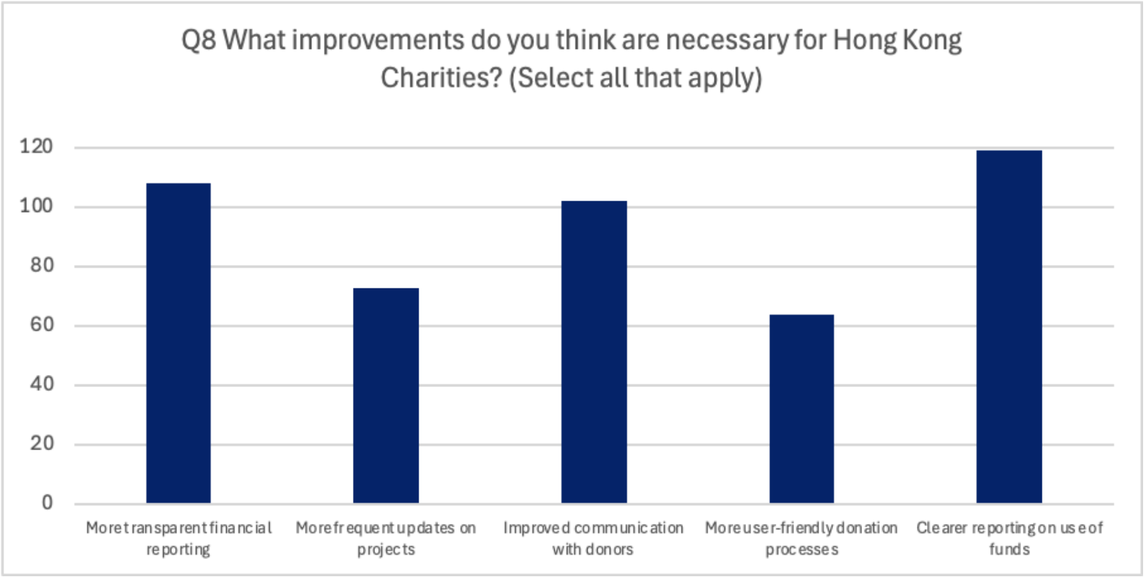

Q3 Have you ever donated to hong kong charities?
Yes
No

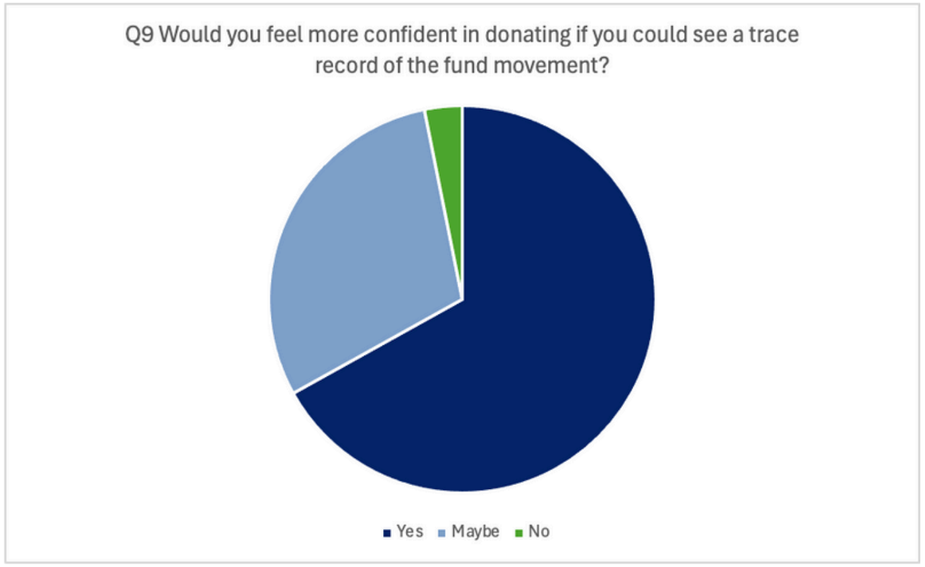

Q4 If so, how often do you donate to local charities in Hong Kong?
60
50
40
30
20
10
0
Daily
Monthly
Yearly
No particular pattern

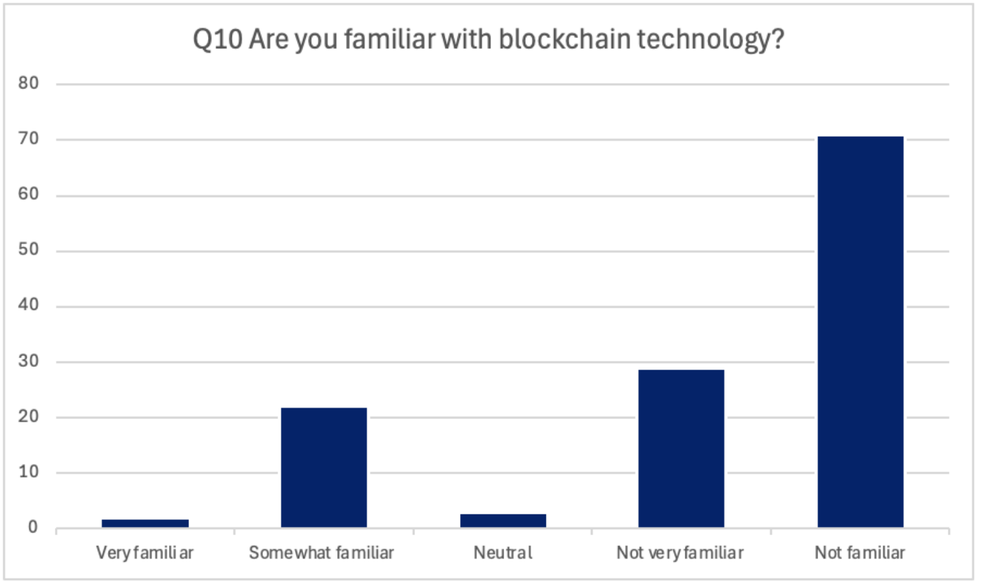

Q5 How would you rate your overall trust in local charities in Hong Kong?
80
70
60
50
40
30
20
10
0
Excellent
Good
Fair
Poor
Very Negative

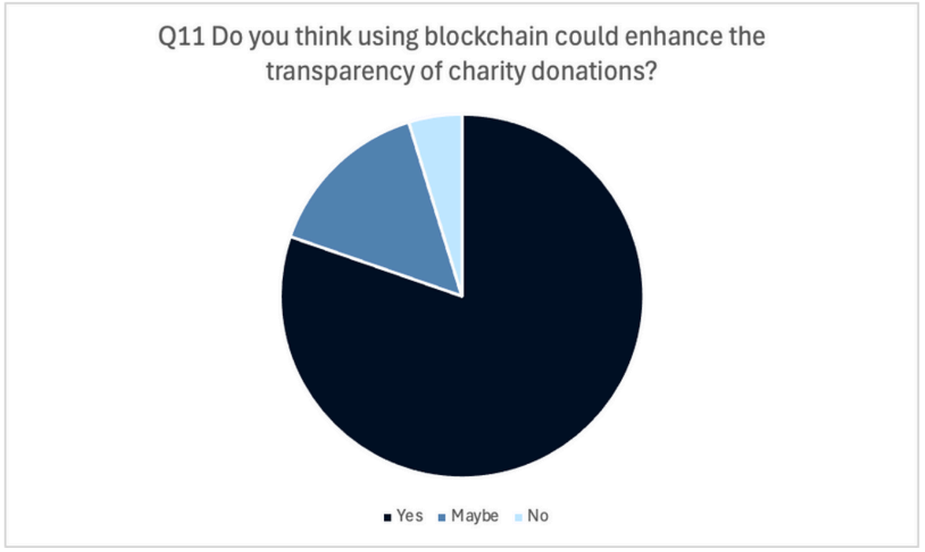

Q6 How do you feel about the transparency of current donation usage in Hong Kong charities? (1 being Very Opaque, 5 being Very Transparent)
60
50
40
30
20
10
0
1
2
3
4
5

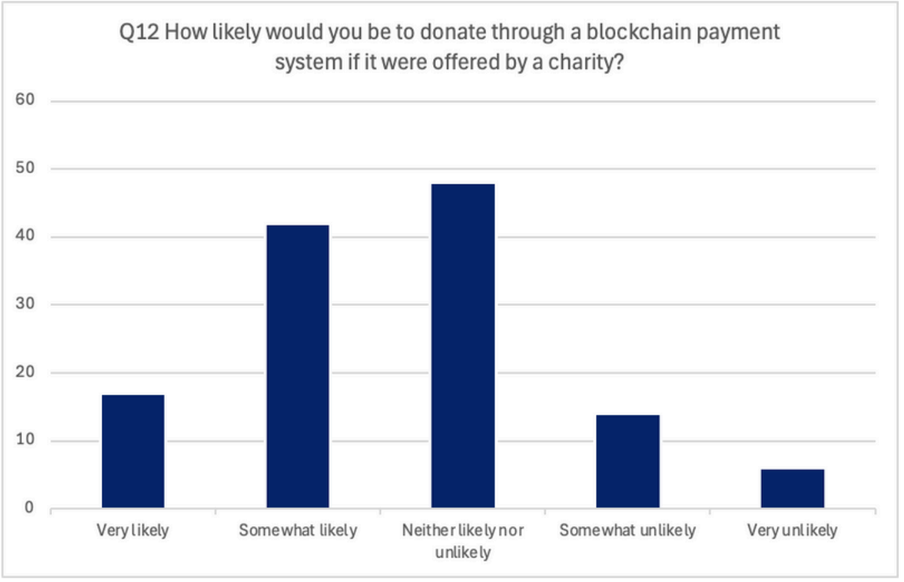

Q7 Have you ever chosen not to donate a charity due to concerns about fund use and transparency?
Yes, many
Yes, few times
No

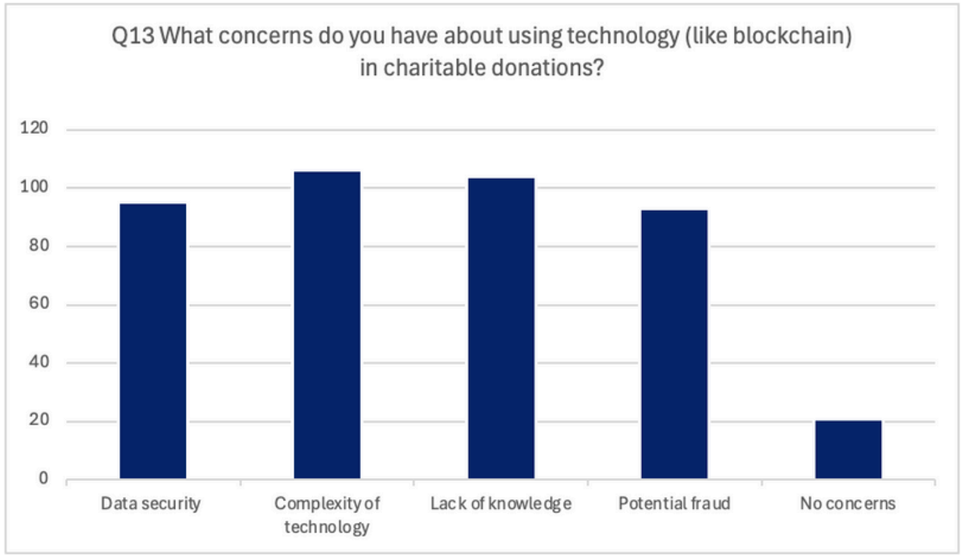

Q8 What improvements do you think are necessary for Hong Kong Charities? (Select all that apply)
120
100
80
60
40
20
0
More transparent financial reporting
More frequent updates on projects
Improved communication with donors
More user-friendly donation processes
Clearer reporting on use of funds

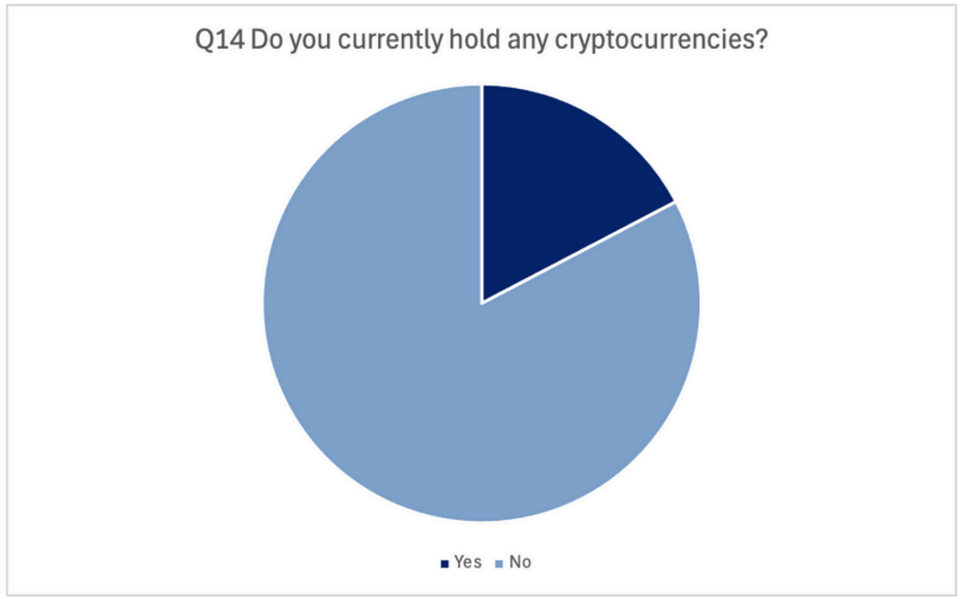

Q9 Would you feel more confident in donating if you could see a trace record of the fund movement?
Yes
Maybe
No

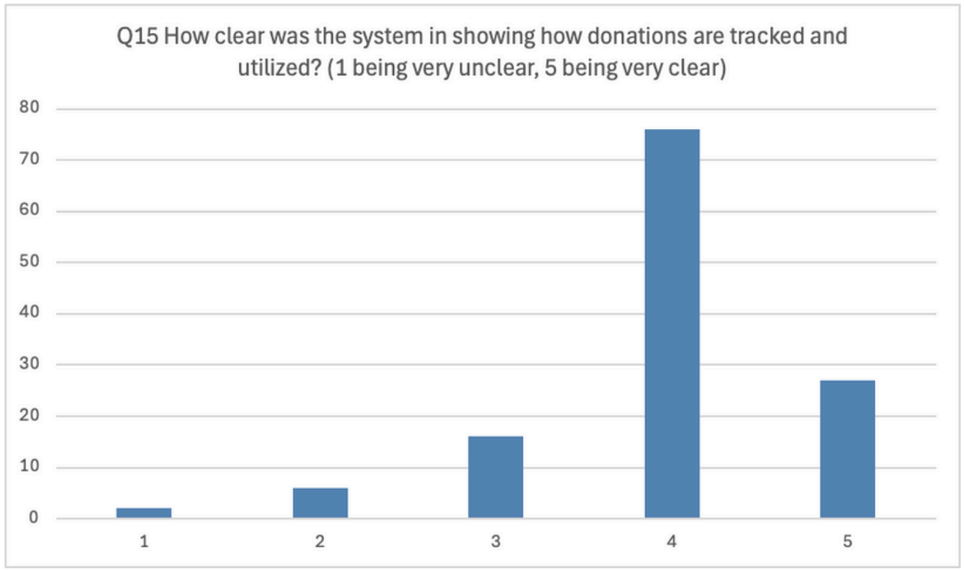

Q10 Are you familiar with blockchain technology?
80
70
60
50
40
30
20
10
0
Very familiar
Somewhat familiar
Neutral
Not very familiar
Not familiar

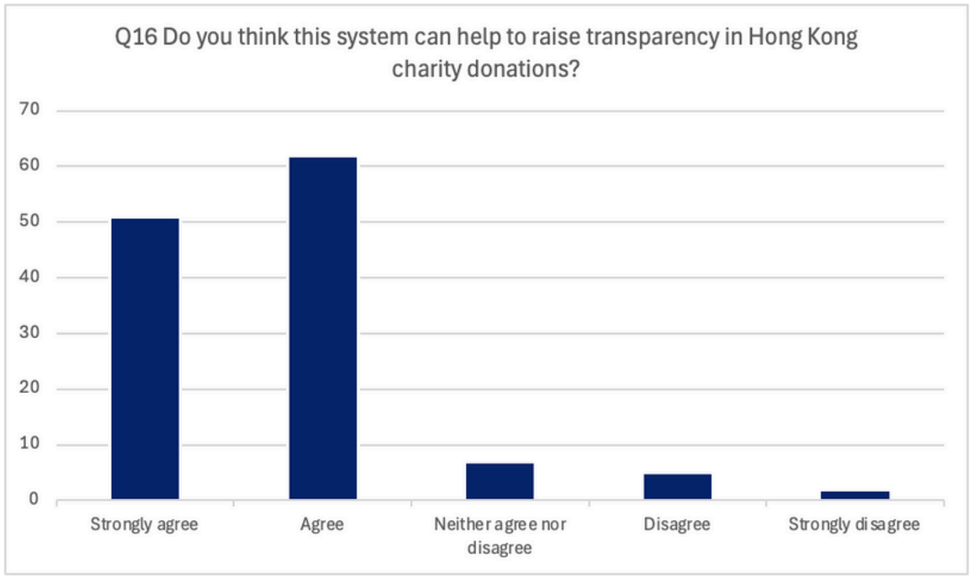

Q11 Do you think using blockchain could enhance the transparency of charity donations?
Yes
Maybe
No

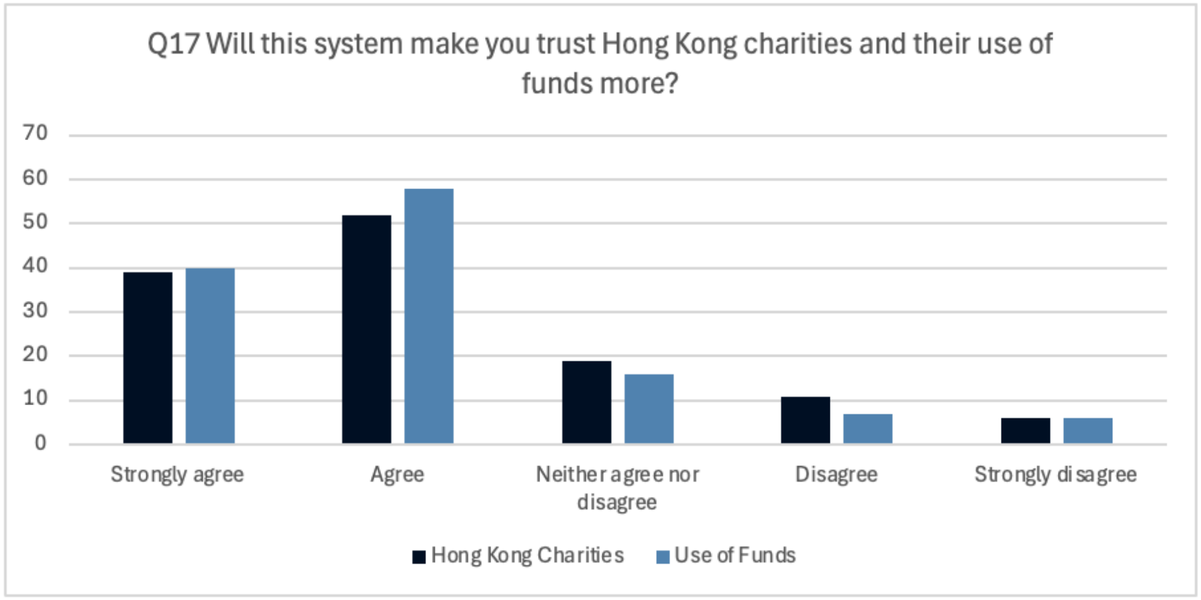

Q12 How likely would you be to donate through a blockchain payment system if it were offered by a charity?
60
50
40
30
20
10
0
Very likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Very unlikely

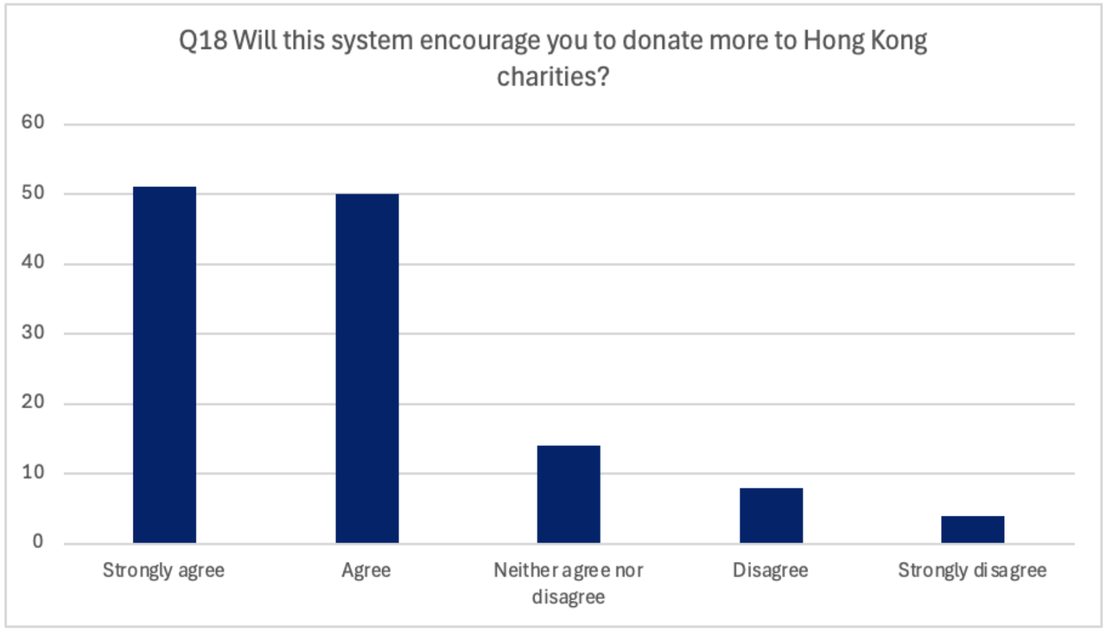

Q13 What concerns do you have about using technology (like blockchain) in charitable donations?
120
100
80
60
40
20
0
Data security
Complexity of technology
Lack of knowledge
Potential fraud
No concerns

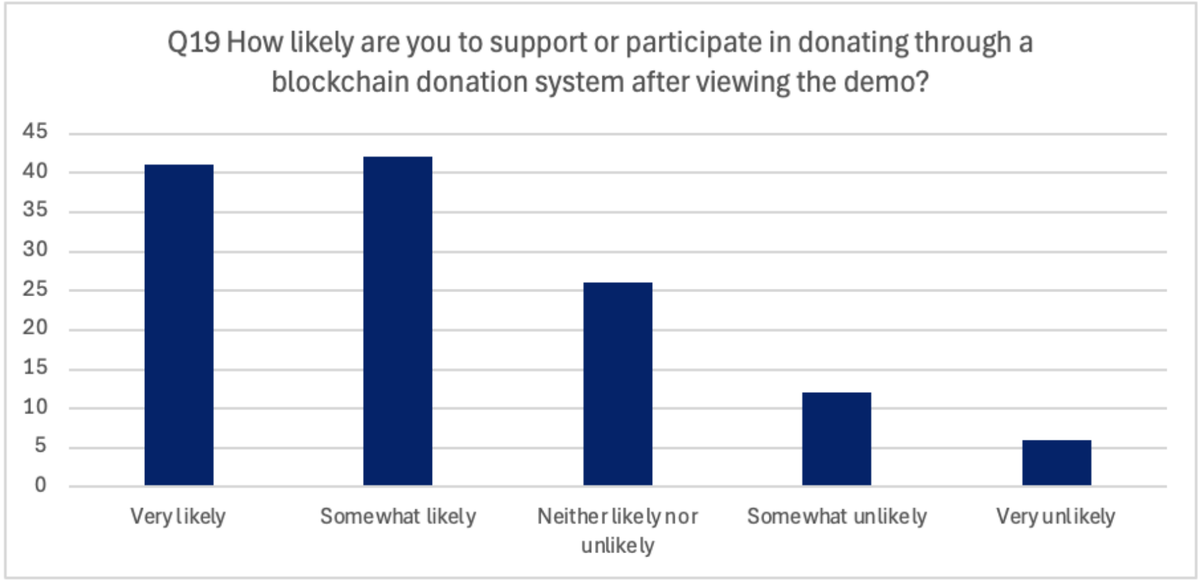

Q14 Do you currently hold any cryptocurrencies?
Yes
No

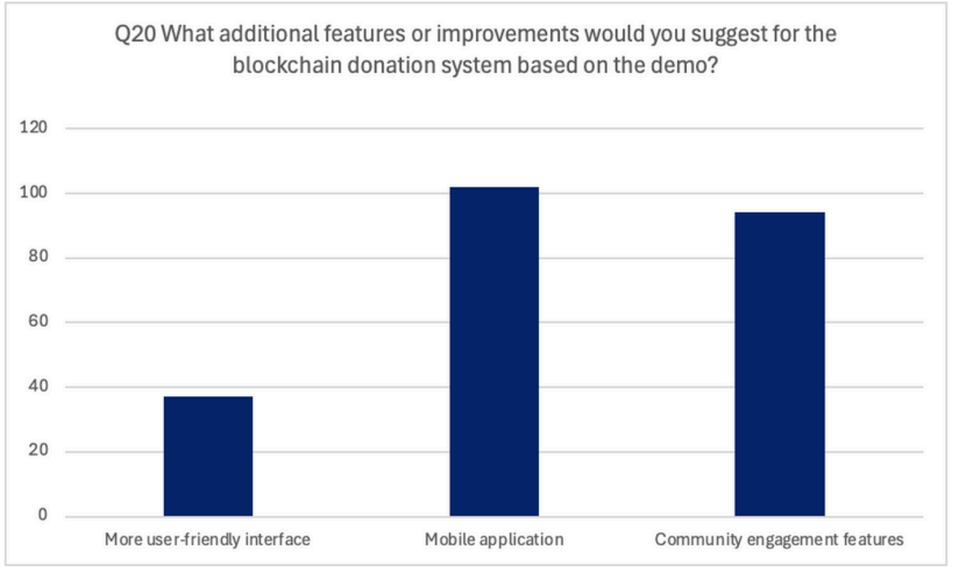

Q15 How clear was the system in showing how donations are tracked and utilized? (1 being very unclear, 5 being very clear)
80
70
60
50
40
30
20
10
0
1
2
3
4
5


Q16 Do you think this system can help to raise transparency in Hong Kong charity donations?
70
60
50
40
30
20
10
0
Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree


Q17 Will this system make you trust Hong Kong charities and their use of funds more?
70
60
50
40
30
20
10
0
Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree
Hong Kong Charities
Use of Funds


Q18 Will this system encourage you to donate more to Hong Kong charities?
60
50
40
30
20
10
0
Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree


Q19 How likely are you to support or participate in donating through a blockchain donation system after viewing the demo?
45
40
35
30
25
20
15
10
5
0
Very likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Very unlikely


Q20 What additional features or improvements would you suggest for the blockchain donation system based on the demo?
120
100
80
60
40
20
0
More user-friendly interface
Mobile application
Community engagement features