Blockchain for Philanthropic Crowdfunding in Indonesia: Enhancing Transparency, Accountability, and Public Trust

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Abstract - Indonesia's philanthropic crowdfunding still struggles with traceable donation flows, which undermines donor confidence. This study adapts the Blockchain-Based Donation Traceability (BBDT) framework using a Design Science Research approach to design, implement, and evaluate a blockchain-based donation prototype. The artifact records on-chain events while leveraging off-chain components for usability, and was demonstrated on an Ethereum testnet. Evidence was collected through interviews with two NGOs (BMH, HI) and a public survey (n = 180) spanning diverse education levels and fintech experience. Results indicate 81.9% of respondents perceive higher transparency, and 65% report greater trust in platforms that provide verifiable donation tracking. NGO feedback supports real-time reporting and auditable logs, while emphasizing practical needs: integration with fiat payment gateways, simplified wallet flows, and regulatory alignment. As a proof-of-concept, this work contributes a contextualized BBDT adaptation, a validated prototype, and early stakeholder evidence for Indonesia's philanthropic sector. Limitations include exploratory analyses, participation limited to two NGOs, and testnet scope; future work will address large-scale usability testing, security/performance evaluation, and legal-religious compliance in production environments.

Keywords: blockchain, philanthropy, donation traceability, BBDT

I. INTRODUCTION

Indonesia consistently ranks as the world's most generous country. The World Giving Index (WGI) report shows that Indonesia has ranked first from 2018 to 2024 with a high level of donation participation [1]. This data is reinforced by a global empirical study by Nakamura et al. that examined 202,898 individuals in 22 countries, in which Indonesia was found to have the highest monthly donation participation rate, reaching 79%, far exceeding the average of other countries [2].This high level of participation not only reflects the spirit of philanthropy that is deeply rooted in the culture of mutual cooperation, but also shows the enormous potential of digitizing donations to strengthen the national philanthropy ecosystem [3].

Philanthropy in Indonesia has grown rapidly, supported by digital platforms and online fundraising that mobilize donations for health, education, disaster relief, and social empowerment [4, 5]. Studies show that donation intention depends on operational transparency and trust, linked to platform credibility and accountability [3, 6, 7]. Challenges include high platform fees and fraud risk [8, 9]. Fundraising success relies on trust among donors, intermediaries, and organizations managing and distributing funds [10, 11].

In Indonesia, documented cases of fund misuse have severely undermined public trust in philanthropic organizations. The most prominent case is Aksi Cepat Tanggap (ACT), a large humanitarian organization charged with misappropriating disaster relief funds and Lion Air JT-610 compensation [12, 13]. Time reported that ACT withheld at least 23% of donations, manipulated campaigns, and had its license revoked by the Ministry of Social Affairs on 5 July 2022 for misusing funds [14].

Beyond ACT, the Financial Transaction Reports and Analysis Centre (PPATK) reported that at least 176 philanthropic organizations in Indonesia were suspected of misusing donations, showing a systemic problem [15]. The scandal spread: a survey found 44.7% of respondents no longer trusted similar institutions, 30.1% preferred other trusted organizations, and 25.2% were neutral [16]. This decline in public trust highlights how misconduct by one major organization threatens the entire philanthropic sector[16, 15, 17].

To prevent corruption and scandals, philanthropic organizations must adopt strong data integrity and fund distribution controls for transparency and accountability. Blockchain and smart contracts offer secure, decentralized systems with real-time donation tracking

[18, 19]. These technologies support transparent and auditable donation flows, enhance operational efficiency, and empower donors with visibility over fund utilisation [20, 21]. The decentralised nature of blockchain also enables broader public verification, helping rebuild trust in charitable activities [22]. Several successful global initiatives demonstrate the practical benefits of such systems. UNICEF's CryptoFund in Switzerland provides public access to all cryptocurrency transactions to ensure humanitarian accountability [19]. In the United States, BitGive's GiveTrack platform offers end-to-end transparency through an immutable ledger [21]. The Binance Charity Foundation has implemented blockchain-based distribution of over 200,000 school meals in Uganda with full traceability, strengthening donor confidence in regions such as Africa and Malta [22]. Meanwhile, China's Alipay Ant Love Charity integrates blockchain into a high-volume micro-donation ecosystem, allowing millions of users to transparently verify fund disbursement [23]. These implementations illustrate how smart blockchain networks can revolutionize donation tracking, particularly in the Web 3.0 era, and serve as valuable benchmarks for developing countries seeking to enhance accountability in philanthropic systems [19].

To formalize such innovations, Almaghrabi and Alhogail [24] introduced the Blockchain-Based Donation Traceability (BBDT) framework, which establishes a secure ecosystem among donors, trustees, and beneficiaries using distributed ledger technology. While BBDT enhances transparency and reduces the risk of fund misuse, challenges such as high implementation costs and low user literacy persist [25, 26]. Addressing these gaps, this study presents a proof-of-concept implementation of the BBDT framework tailored to the Indonesian philanthropic context, where trust erosion and fund mismanagement are ongoing concerns [12, 24]. Employing the Design Science Research (DSR) methodology [27], we develop a smart contract-based prototype that enables real-time tracking and conditional disbursement. The prototype is evaluated through donor surveys and NGO interviews to assess its perceived benefits and implementation challenges. This study contributes a contextual adaptation of BBDT, a functional blockchain prototype for crowdfunding transparency, and empirical insights into usability, traceability, and system integration barriers in Indonesia's nonprofit sector.

II. METHOD

This study employs the Design Science Research (DSR) approach to explore the design and early usefulness of a blockchain-based donation traceability artifact in the context of Indonesian philanthropy. The six DSR activities adopted are problem identification, objectives of a solution, design and development, demonstration, evaluation, and communication. The DSR process is shown in Figure 1 as an iterative workflow adapted from [27].

Problem Identification. This exploratory stage used two complementary data sources to map key challenges in digital philanthropy. Semi-structured interviews were conducted with two national philanthropic institutions, Baitul Maal Hidayatullah (BMH) and Human Initiative (HI). Each was represented by a central-level informant. These interviews revealed campaign workflows, reporting mechanisms, traceability limitations, and institutional audit practices. An online survey of 180 respondents was also distributed via social media, mainly Twitter and Instagram, using convenience sampling. The survey covered digital donation experiences, perceptions of transparency and accountability, awareness of blockchain, and interest in real-time donation traceability. Although this study did not focus on statistical inference, descriptive analysis identified key patterns to inform the prototype's design, aligning with user expectations and institutional realities.

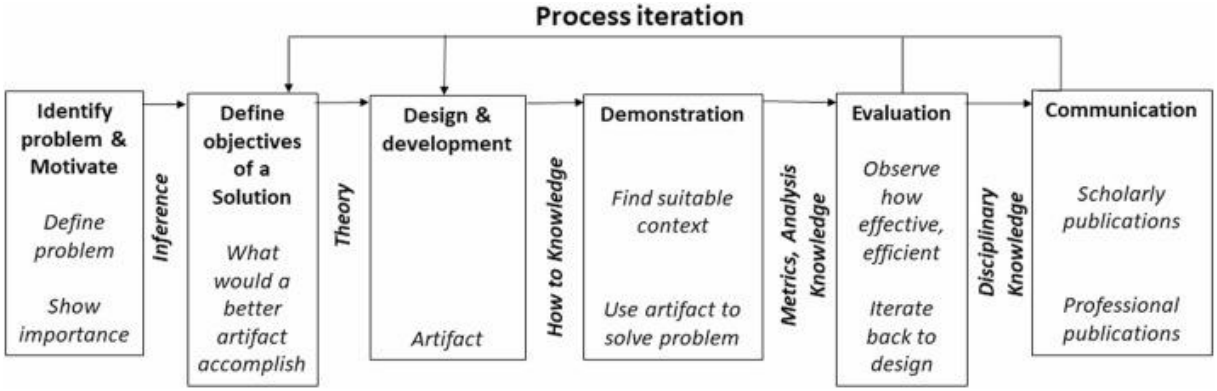

Fig. 1 Design science research methodology [27]

Objectives of a Solution. We set qualitative objectives for the artifact: enhance perceptions of transparency and adapt the BBDT framework to the Indonesian context. We used findings and targeted features to enable transaction audits and ensure end-to-end donation traceability aligned with institutional needs.

Design and Development. The artifact adapts the Blockchain-Based Donation Traceability (BBDT) framework and demonstrates the roles of donor, trustee, and needy. The on-chain component was implemented in Solidity 0.8.21 on an Ethereum local testnet (Ganache) to support campaign verification, donation recording, staged or per-campaign withdrawals, and role-based access control. The off-chain component was built with Next.js to provide the user interface and to index the audit trail.

Demonstration. A guided walkthrough was executed on Ganache using test-ETH. The scenario covered campaign registration, trustee verification, donation transactions, milestone or per-campaign withdrawals, and audit-log review. Gas usage was recorded as a surface-level indicator of technical efficiency. The demonstration was intended as a proof of concept, not as a measurement of real-world impact.

Evaluation. The evaluation used an exploratory approach, combining institutional interviews and a public survey to validate the early-stage prototype. Semi-structured interviews with Baitul Maal Hidayatullah and Human Initiative addressed system alignment, transparency, and potential adoption. Interview responses were thematically analyzed. Separately, a structured online survey shared on social media achieved broad reach. After watching a simulation video, 180 respondents provided demographic data and open-ended feedback. These responses were analyzed using descriptive and thematic methods. This dual-method evaluation provided initial insights into technical feasibility, user perception, and institutional relevance. These findings align with the study's proof-of-concept aim.

Ethical Considerations and Limitations. All procedures followed informed consent with data anonymization, and demonstrations used simulated funds (test-ETH). Limitations include the survey scope, the use of two institutional informants, and testnet evaluation that may not reflect performance or costs on public networks. The study is therefore exploratory and does not claim demonstrated improvements in actual transparency or public trust.

III. RESULT AND DISCUSSION

The discussion of the research results follows the six stages of DSR, as outlined below.

A. Problem Identification

1) *Interview with philanthropic organisations:* Interviews with BMH and HI explored their operational practices, challenges, and perspectives on transparency and accountability in digital donation systems. Both organisations emphasised the need for technological solutions to enhance donor trust. Key findings are summarised in Table I.

2) Public Survey: A public survey involving 180 respondents was conducted to assess public perceptions of digital donation systems and their views on blockchain adoption in Indonesia. Most respondents were aged between 21–30 years (57%), with 54% male and 46% female participants. The majority held a bachelor's degree (62%) and worked as private employees (49%) or students (21%), indicating a well-educated and digitally literate donor group. Furthermore, 74% reported using e-wallets or mobile banking for donations, reflecting high readiness for digital transformation in the philanthropic sector. Table II summarizes the key findings derived from the questionnaire.

B. Objective of the Solution

This study adopts the BBDT framework [24] to enhance transparency, traceability, and accountability in philanthropic fund management. The framework enables real-time tracking of donations from donors to beneficiaries using secure and auditable blockchain transactions. As shown in Fig. 2, BBDT connects donors, organisations, and recipients through an immutable ledger supported by a public permissioned blockchain that allows selective transparency and multi-stakeholder governance.

To evaluate its applicability in Indonesia, this study develops a proof-of-concept prototype that adapts BBDT to local philanthropic workflows. Interviews with BMH and HI indicate that many organisations already follow structured procedures for fundraising, verification, and reporting. The prototype is designed to integrate with these existing systems while addressing gaps such as manual audits, limited real-time monitoring, and delayed reporting. This implementation demonstrates how this implementation demonstrates how blockchain technology offers a potential mechanism to strengthen donation oversight and contribute to perceptions of increased public trust in digital giving.

TABLE I
SUMMARY OF ORGANIZATIONAL FINDINGS (BMH AND HI)

No	Aspect	BMH	HI
1	Digital Platform	Utilises Berbagi BMH, a Laravel-based system for campaign and donor management. One of its programs, Qurban BMH, integrates blockchain to enable donors to track distribution progress in real time. Payments can be made through multiple digital channels, including bank transfers, e-wallets, and connected payment gateways.	Operates Solusi Peduli, a WordPress-based platform integrated with Midtrans and Ipaymu payment gateways. It supports online fundraising, automated transaction reports, and donor notifications via email and WhatsApp. Partial manual verification remains before reports are published.
2	Transparency and Reporting	Financial and activity reports published on website and social media. Donors receive updates through WhatsApp and can verify transactions via blockchain explorer.	Campaign and financial reports shared through website, email, and WhatsApp. Annual audits are publicly available to maintain donor confidence.
3	*Operational Challenges*	Consolidation of data from regional offices is still manual, resulting in reporting delays. Differences in digital literacy and infrastructure limitations in remote areas pose additional barriers.	*Integration between internal databases and public platforms remains limited. Key challenges include restricted automation in data validation and verification, as well as the need for staff training in digital system management.*
5	Human Resources and Technical Capacity	Currently transitioning from manual to fully digital operations. Staff require ongoing training in digital tools and blockchain concepts, especially across regional offices.	Staff are adaptable to digital systems but require continuous capacity building, particularly in data security, integration, and blockchain-related literacy.
6	Efforts to Strengthen Transparency	Improves reporting efficiency through audit digitalisation, open communication with donors, and real-time campaign updates via public digital channels.	Develops integrated reporting dashboards and digital audit systems to allow donors to trace fund flows in real time from donation to distribution.
7	Motivation for Blockchain Adoption	Views blockchain as a strategic solution to enhance trust, automate donation traceability, and improve reporting efficiency. Full implementation depends on human resource readiness, financial support, and internal leadership endorsement.	Considers blockchain a key innovation to strengthen credibility, efficiency, and real-time reporting. Implementation is planned after achieving technical readiness, regulatory compliance, and internal capacity development.

TABLE II
SUMMARY OF PUBLIC SURVEY RESULT (n = 180)

No	Evaluation Aspect	Key Findings
1	Donation experience	93.4% of respondents have donated via digital platforms showing that online giving has become the primary channel for donations.
2	Donation decision factors	Donation decisions were mainly influenced by trust (29%), social causes (28%), and transparency (21%), highlighting the importance of institutional credibility.
3	*Confidence in fund use*	34% of respondents expressed doubts about whether funds were used properly, reflecting ongoing concerns over misuse and reporting reliability.
4	Transparency perception	61% considered current reporting by philanthropic platforms insufficient to ensure transparency and accountability.
5	Importance of transparency	72.8% stated that transparency is a critical factor influencing their intention to donate online.
6	Blockchain awareness	81.9% believed that blockchain technology could improve transparency in managing donations through immutable and traceable records.
7	Trust impact of blockchain	65% said they would trust philanthropic organizations more if blockchain were implemented in their donation processes.
8	Preference for real-time tracking	92% supported real-time tracking of donations to verify distribution and utilization, emphasizing the need for traceable and accountable donation systems.

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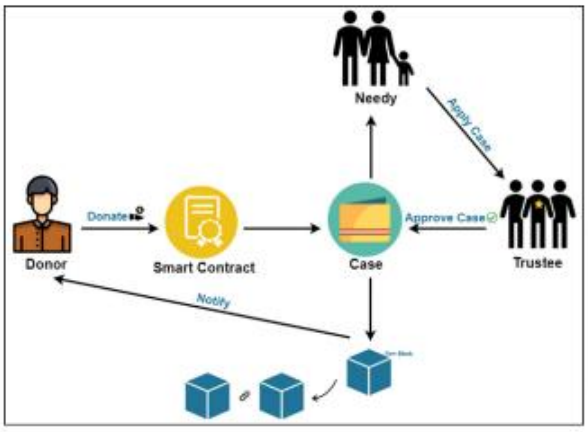

Fig. 2 Blockchain-based donation traceability (BBDT) framework

C. *Design and development*

The design and development phase aims to operationalise the adapted BBDT framework into a functional blockchain-based donation system. This phase includes the formulation of the system architecture, use case design, and business process modelling that align with the operational context of philanthropic organisations in Indonesia. The system was developed as a proof-of-concept prototype to demonstrate how blockchain technology can be integrated into donation workflows to ensure transparency, accountability, and traceability of funds.

1) System Architecture: The proposed system architecture, adapted from the BBDT framework, consists of on-chain and off-chain components that work together to ensure transparency, immutability, and efficiency, as shown in Fig.

The on-chain component manages the core blockchain operations, including donation recording, case validation, and fund disbursement through smart contracts that automatically enforce system rules. Three primary smart contracts are deployed: Join.sol for user registration and authentication using verified wallet addresses, Charity.sol for campaign management and transaction traceability, and Wallet.sol for secure fund storage, allocation, and withdrawal.

The off-chain component supports usability and cost efficiency by handling non-blockchain processes such as interface interaction, local data storage, and communication services. Tools including MongoDB, Truffle, Web3.js, MetaMask, Next.js, and TailwindCSS are integrated to manage data, compile and deploy smart contracts, facilitate blockchain interactions, enable wallet connectivity, and create a responsive user interface. The integration of both components maintains a balance between security, transparency, and cost-effectiveness, addressing the operational needs of philanthropic organisations.

2) Use Case: Observations of digital platforms operated by Berbagi BMH and Solusi Peduli HI indicated that the existing donation models lack donor-led campaign flexibility. Therefore, the BBDT use case was modified to include a “Fundraiser” feature, as illustrated in Fig. 4.

This feature enables donors to create their own campaign pages while keeping all funds linked to the main campaign. Fundraisers act as promoters who help expand donation reach but cannot withdraw the collected funds. This modification supports community-based fundraising while preserving financial integrity, traceability, and centralised accountability within the system.

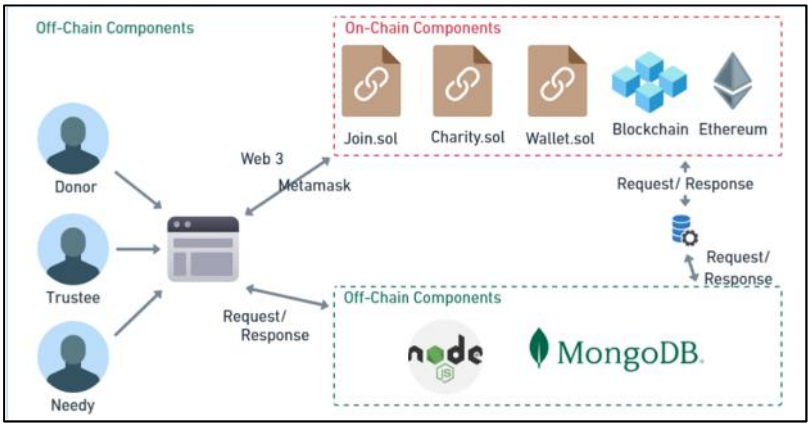

Fig. 3 System architecture of blockchain-based donation system

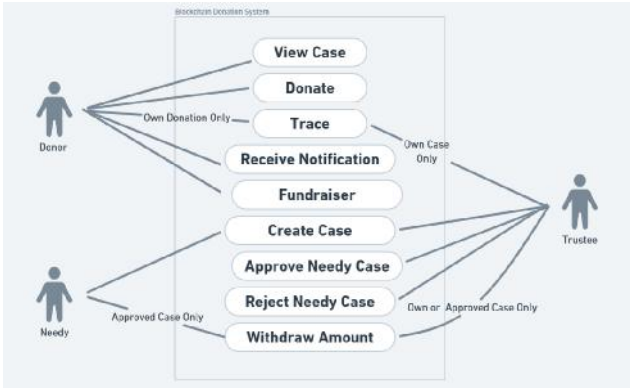

Fig. 4 Use cases of blockchain-based donation system

3) Business Process: The business process of the blockchain-based donation system is illustrated in Figure 5. The process begins when a needy submits a donation request, which is then reviewed and verified by the trustee to ensure the validity and eligibility of the case. Once approved, the donation campaign becomes accessible to donors, who can contribute funds through a smart contract. After the donation is confirmed and recorded on the blockchain, the needy can withdraw the allocated funds in accordance with the established rules. All transactions are permanently stored on the blockchain, ensuring that data cannot be modified or deleted. The system automatically sends notifications to donors regarding donation status updates, allowing them to monitor and verify the use of funds in real time.

D. Demonstration

To assess the prototype's real-world applicability, we conducted a two-stage demonstration on a Ganache-powered Ethereum testnet. The first stage involved an interactive session with domain experts from two philanthropic organizations, BMH and HI. They evaluated the system by simulating their entire operational workflow, from approving new campaigns to tracking and disbursing donations. This expert validation was vital to confirm that our system's logic and features were genuinely aligned with the practical needs of philanthropic institutions in Indonesia.

Building on this institutional feedback, the second stage focused on the donor's perspective. We presented a video tutorial to a public audience, showcasing the end-to-end process of making and tracing a donation. The goal was to gauge the system's perceived transparency and ease of use. Together, these demonstrations provided comprehensive insights, confirming that the prototype's core functions operated as intended while also highlighting its potential to enhance public trust through a more transparent process. The user interface for these key processes is illustrated in Fig. 6 to Fig. 8.

E. Evaluation

1) Interview with philanthropic organisations: Interviews with BMH and HI were conducted to assess the feasibility, usability, and institutional readiness of the blockchain-based donation prototype. Both organisations agreed that blockchain can significantly improve transparency and donor trust but emphasised that practical adoption requires simplification, regulatory compliance, and integration with existing systems. The main findings are summarised in Table III.

2) Public Survey: A public evaluation involving 150 respondents was conducted to assess perceptions of the blockchain-based donation prototype. The respondents, aged 21–45 years (61% female, 39% male), were mostly bachelor's degree holders and active users of digital financial services. Essay-based feedback was collected on usability, transparency, security, cost, and the use of digital wallets and cryptocurrency. The main findings are summarized in Table IV.

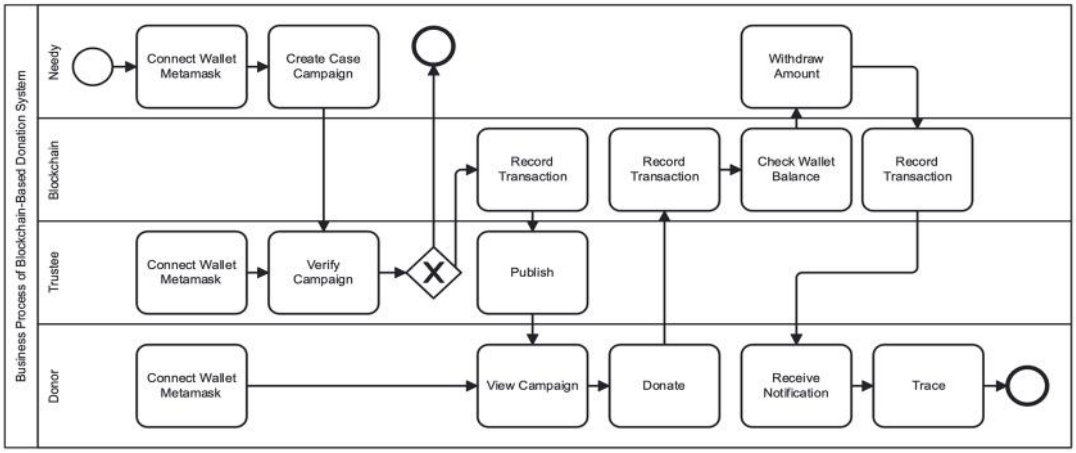

Fig. 5 Business process of blockchain-based donation system

Fig. 6 Campaign details page

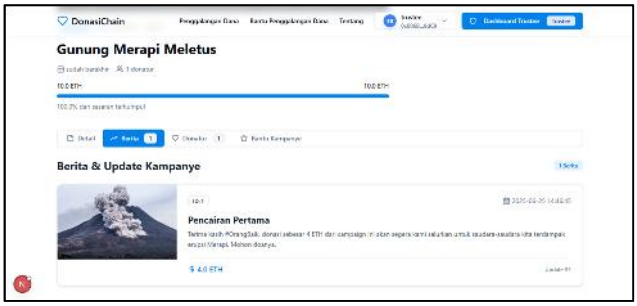

Fig. 7 Campaign details page, disbursement tab

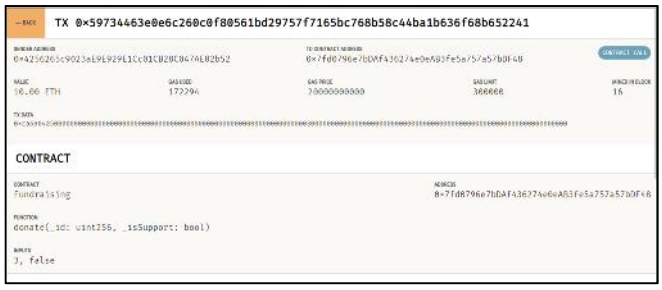

Fig. 8 Event display on transaction hash donation transactions

These findings are consistent with global research highlighting blockchain's potential to improve transparency and trust in philanthropy. However, the Indonesian context presents distinct challenges, including low blockchain literacy, regulatory uncertainty, and religious concerns related to cryptocurrency. Both institutions and survey participants favor a hybrid model that preserves donor convenience through fiat currency while using blockchain for auditability. These insights emphasize the need for technological solutions that align with local norms, legal frameworks, and religious values.

TABLE III
ORGANISATIONAL EVALUATION OF BLOCKCHAIN-BASED DONATION PROTOTYPE

No	Evaluation Dimension	BMH	HI
1	Transparency and Accountability	Sees strong value for transparent, tamper-resistant reporting that can strengthen public trust.	Supports real-time transaction tracking. Requires a clear and donor-friendly explanatory dashboard.
2	Business Process Fit	The proposed flow aligns with current donation, approval, and reporting procedures. Donors should not be required to create accounts. Integration with payment gateways and tiered approvals is needed.	Compatible with the existing OSS-based digital system. Integration with current payment and disbursement channels is required.
3	*Usability*	Donor-facing crypto wallets are impractical. Donations should remain in fiat. On-chain recording runs automatically at the institutional or backend level.	Simplicity is the priority. The donor interface should resemble existing donation platforms. Blockchain data is processed in the backend.
4	Regulation and Sharia	Prioritizes fiat donations through payment gateways. Avoids cryptocurrency due to volatility and Sharia considerations.	Adoption must comply with PUB regulations of the Ministry of Social Affairs and related guidelines to maintain compliance and public acceptance.
5	Technology Readiness	Fewer than ten percent of staff are familiar with blockchain. Internal training and collaboration with technology partners are needed.	training and collaboration with technology partners are needed. Technically ready. Donor education and a gradual rollout remain important.
6	Implementation Challenges	Low digital literacy. Limited staff capacity. Connectivity constraints in remote areas.	Internal process adjustments. Increased donor awareness. Regulatory clarity is still needed..
7	Recommendations	Use blockchain as a transparent audit layer. Keep donor payment flows in fiat.	Adopt a hybrid approach that combines on-chain verification with conventional payments through phased internal pilots.

TABLE IV
SUMMARY OF PUBLIC EVALUATION OF BLOCKCHAIN-BASED DONATION PROTOTYPE (N=150)

No.	Evaluation Aspect	Key Findings
1	Usability	Most respondents (98%) stated the system was easy to understand and navigate.
2	Transparency & Security	A large majority (86–84%) felt confident in the system's transparency and data integrity due to immutable blockchain records.
3	*Transaction Cost*	Many (75%) viewed gas fees as high for small donations and suggested optimization for micro-donations.
4	Digital Wallet & Cryptocurrency	About two-thirds (64–68%) found wallet setup complex and crypto usage less practical due to volatility; most (71%) preferred stable tokens pegged to Rupiah.
5	Adoption & Payment Model	The majority (77–95%) supported a hybrid model combining conventional payments with on-chain traceability and expressed willingness to use the system if adopted by NGOs.
6	User Challenges	Respondents highlighted technical complexity, limited literacy, and unclear regulations as main adoption barriers.

IV. CONCLUSION

This study implemented a proof-of-concept donation system based on the BBDT framework using smart contracts and a hybrid blockchain architecture tailored for Indonesia's philanthropic sector. The prototype enables real-time tracking, conditional disbursement, and transparent audit trails. Evaluation results from 150 public respondents indicate high usability (98%) and confidence in data transparency (86%), while interviews with BMH and HI affirmed institutional alignment but highlighted the need for simplified donor interfaces, fiat-based workflows, and regulatory integration. Key limitations include a small number of NGO participants, absence of large-scale usability testing, and limited statistical analysis of user data. Future research should explore scalability, conduct formal usability and security evaluations, and assess compliance with legal and religious frameworks to support real-world adoption.

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REFERENCES

[1] C. B. Utami, Slamet, T. Ashari, and Dedi Kurniawan, "The Influence of Trust, Peers, and Enjoyment on Online Donations and Continuation Intentions: An Ethical Philanthropic Approach in Islamic Economics," *Journal of lslamic Economics and Bussines Ethics*, vol. 2, no. 3, pp. 252–274, Jul. 2025, doi: 10.24235/jiesbi.v2i3.399.

[2] J. S. Nakamura *et al.*, "Demographic variation in charitable giving and helping across 22 countries in the Global Flourishing Study," *Sci Rep*, vol. 15, no. 1, p. 14802, 2025, doi: 10.1038/s41598-025-96009-3.

[3] N. N. Hamidah, F. Aligarh, A. Setiawan, U. Usnan, and F. Hilmi, "Why do Indonesian Muslims Donate through Crowdfunding Platforms? An Integration of UTAUT, Transparency, and Trust," *International Journal of Islamic Economics and Finance (IJIEF)*, vol. 7, no. 2, pp. 267–288, Jul. 2024, doi: 10.18196/ijief.v7i2.22556.

[4] B. Tiganoaia and G.-M. Alexandru, "Building a Blockchain-Based Decentralized Crowdfunding Platform for Social and Educational Causes in the Context of Sustainable Development," *Sustainability*, vol. 15, no. 23, p. 16205, Nov. 2023, doi: 10.3390/su152316205.

[5] I. Ahmed, K. Fumimoto, T. Nakano, and T. H. Tran, "Blockchain-Empowered Decentralized Philanthropic Charity for Social Good," *Sustainability (Switzerland)*, vol. 16, no. 1, Jan. 2024, doi: 10.3390/su16010210.

[6] N. Salido-Andres, M. Rey-Garcia, L. I. Alvarez-Gonzalez, and R. Vazquez-Casielles, "Mapping the field of donation-based crowdfunding for charitable causes: systematic review and conceptual framework," *Voluntas*, vol. 32, no. 2, pp. 288–302, 2021, doi: https://doi.org/10.1007/s11266-020-00213-w.

[7] W. Liu, Y. Li, X. Wang, Y. Peng, W. She, and Z. Tian, "A donation tracing blockchain model using improved DPoS consensus algorithm," *Peer Peer Netw Appl*, vol. 14, no. 5, pp. 2789–2800, Sep. 2021, doi: 10.1007/s12083-021-01102-9.

[8] Y. Zhang, C. D. Tan, J. Sun, and Z. Yang, "Why do people patronize donation-based crowdfunding platforms? An activity perspective of critical success factors," *Comput Human Behav*, vol. 112, p. 106470, 2020, doi: https://doi.org/10.1016/j.chb.2020.106470.

[9] S. Apriliyanto, Y. W. Syaifudin, and I. Siradjuddin, "Designing Token-based Crowdfunding System on Private Blockchain Network for Indonesian Cooperative Investment Accountability," in *2024 IEEE International Symposium on Consumer Technology (ISCT)*, 2024, pp. 421–426. doi: 10.1109/ISCT62336.2024.10791255.

[10] G. Hassna, G. Burtch, and J. L. Zhao, "Understanding the Role of Lead Organizational Donor Types in Civic Crowdfunding," *J Assoc Inf Syst*, vol. 25, no. 4, pp. 990–1036, 2024, doi: 10.17705/1jais.00874.

[11] D. Cumming, L. Hornuf, M. Karami, and D. Schweizer, "Disentangling crowdfunding from fraudfunding," *Journal of Business Ethics*, vol. 182, no. 4, pp. 1103–1128, 2023, doi: https://doi.org/10.1007/s10551-021-04942-w.

[12] M. K. Hamsin, A. Halim, and R. Anggriawan, "Securing Digital Zakat Transactions from Fraud in a Smart Society: Legal Insights and Recommendations," *E3S Web of Conferences*, vol. 594, p. 07001, Nov. 2024, doi: 10.1051/e3sconf/202459407001.

[13] D. S. Nuraeni and U. Juhana, "Criminal Liability in the Misuse of Donations by the Aksi Cepat Tanggap Foundation: A Juridical Analysis of Justifying and Excusing Grounds," *Journal of Law, Politic and Humanities*, vol. 5, no. 6, pp. 4793–4805, Sep. 2025, doi: 10.38035/jlph.v5i6.2213.

[14] D. Firanty, R. Usman, and R. Budiman, "Tanggung Gugat Oleh Lembaga Kemanusiaan Aksi Cepat Tanggap Dalam Penyelewengan Dana," *Lex Positivis*, vol. 1, no. 2, 2023, Accessed: Oct. 24, 2025. [Online]. Available: https://jtamfh.ulm.ac.id/index.php/jtamfh/article/view/16/12

[15] N. N. Sirait and L. H. Y. Rangkuti, "Non-Profit Organisations (NPOs) As Media for Money Laundering Crimes," *AML/CFT Journal: The Journal of Anti Money Laundering and Countering the Financing of Terrorism*, vol. 1, no. 2, pp. 132–145, Jun. 2023, doi: 10.59593/amlcft.2023.v1i2.54.

[16] I. A. Faiz and F. Taib, "Developing a public accountability assessment model for Islamic non-government organisations (INGOs) in Indonesia: an information perspective," *Journal of Financial Reporting and Accounting*, Jun. 2025, doi: 10.1108/JFRA-07-2024-0486.

[17] R. K. Pitria, D. R. Aisy, and R. R. T. Anggraeni, "Does Reporting of Aksi Cepat Tanggap Cases Affected Public Trust on Zakat Institutions?," *Signifikan: Jurnal Ilmu Ekonomi*, vol. 13, no. 1, pp. 207–216, Oct. 2024, doi: 10.15408/sjie.v13i1.41075.

[18] C. Nairi, M. Cicioğlu, and A. Çalhan, "Smart blockchain networks: Revolutionizing donation tracking in the Web 3.0," *Comput Commun*, vol. 228, p. 107972, Dec. 2024, doi: 10.1016/j.comcom.2024.107972.

[19] H. Wu and X. Zhu, "Developing a Reliable Service System of Charity Donation During the Covid-19 Outbreak," *IEEE Access*, vol. 8, pp. 154848–154860, 2020, doi: 10.1109/ACCESS.2020.3017654.

[20] S. Ajmal, M. Bin Muzammil, M. Shoaib, and M. H. Mehmood, "Empowering Donors: How Blockchain Technology Can Help Ensure Their Contributions Reach the Right Recipients," in *2nd International Conference on Business Analytics for Technology and Security, ICBATS 2023*, Institute of Electrical and Electronics Engineers Inc., 2023. doi: 10.1109/ICBATS57792.2023.10111126.

[21] M. S. Farooq, M. Khan, and A. Abid, "A framework to make charity collection transparent and auditable using blockchain technology," *Computers & Electrical Engineering*, vol. 83, p. 106588, May 2020, doi: 10.1016/j.compeleceng.2020.106588.

[22] D. Saraswat, F. Patel, P. Bhattacharya, A. Verma, S. Tanwar, and R. Sharma, "UpHaaR: Blockchain-based charity donation scheme to handle financial irregularities," *Journal of Information Security and Applications*, vol. 68, p. 103245, Aug. 2022, doi: 10.1016/J.JISA.2022.103245.

[23] B. He, T. Feng, J. Fang, C. Liu, and C. Su, "A Secure and Efficient Charitable Donation System Based on Ethereum Blockchain and Searchable Encryption," *IEEE Transactions on Consumer Electronics*, vol. 70, no. 1, pp. 263–276, Feb. 2024, doi: 10.1109/TCE.2023.3323356.

[24] A. Almaghrabi and A. Alhogail, "Blockchain-based donations traceability framework," *Journal of King Saud University - Computer and Information Sciences*, vol. 34, no. 10, pp. 9442–9454, Nov. 2022, doi: 10.1016/j.jksuci.2022.09.021.

[25] J. Sung, G.-W. Bock, and H.-M. Kim, "Effect of blockchain-based donation system on trustworthiness of NPOs," *Information & Management*, vol. 60, no. 5, p. 103812, Jul. 2023, doi: 10.1016/j.im.2023.103812.

[26] P. Baudier, G. Kondrateva, and C. Ammi, "Can blockchain enhance motivation to donate: The moderating impact of religion on donors' behavior in the USA's charity organizations," *Technol Forecast Soc Change*, vol. 191, p. 122524, Jun. 2023, doi: 10.1016/J.TECHFORE.2023.122524.

[27] K. Peffers, T. Tuunanen, M. A. Rothenberger, and S. Chatterjee, "A Design Science Research Methodology for Information Systems Research," *Journal of Management Information Systems*, vol. 24, no. 3, pp. 45–77, Dec. 2007, doi: 10.2753/MIS0742-1222240302.