

Chapter 8

Donation Model Development Based on the Methodologies of Blockchain

Meng-Hsuan Fu

Shih Hsin University, Taipei, Taiwan

ABSTRACT

In order to solve the problems occurring in the current donation systems, the methodologies of blockchain include decentralized data storage, transaction hash, digital signature, blocks connection within the chain are adopted to the donation model, called blockchain donation model (BDM). In BDM, all donation transactions are recorded in detail and stored permanently; they are not allowed to change, modify, or delete. In addition, donors could indicate the specific groups for donating directly because of the peer-to-peer transmission method. All the information is sealed through the secure mechanism; only donors and donees could decrypt it with their own keys. BDM records transaction flows starting from receiving to spending the donation in detail. BDM is not only a place for listing details of donations but also a secured transaction storage. The blocks are connected together with a strong chain which is maintained by all nodes in the blockchain network. Thus, BDM is a platform dealing with the donation issue under a well secure mechanism, no intermediaries, and a permanent storage.

INTRODUCTION

Blockchain technology is as well known as used on Bitcoin which is defined as a peer to peer (P2P) electronic cash system by Satoshi Nakamoto (Nakamoto, 2008). In blockchain, information transmission between node and node is through P2P, the node here is seen as a computer or a user. The block is the basic unit of information exchange between node and node, the blocks are connected together to form a blockchain. In other words, there has no management organizations exist between blocks that is one of the blockchain characteristics called decentralized. In blockchain, all attended users have equal rights to verify the transactions in order to keep the fairness when no intermediaries intervening.

DOI: 10.4018/978-1-7998-5351-0.ch008

The technologies used in blockchain are raised attention because of successful Bitcoin. Blockchain has changed the operation in financial market mostly. In past decades, bank services are changed from fully human assistant tasks into internet self-assistant tasks. That means users could manage their transactions through internet self-services provided by banks without necessary of agent assisting. In blockchain, information transmission between users along with both users agreements is sufficient because of P2P transferring method. The distributed ledger method used in blockchain is adopted with the cryptography in both encrypt and decrypt transactions. The majority decision is taken to verify transactions in the blockchain. All transactions are secured, verified, transported in a P2P network, and they are stored in related blocks which are connected in sequence to form a secured and unchangeable blockchain (Iansiti & Lakhani, 2017) (Zhu et al, 2016).

The major characteristics of blockchain are decentralized, recorded data as block form in which, data cannot be deleted or changed, data will be secured and transmission procedures will be transparently. The data transference method used in blockchain is P2P, also as well known as decentralized concept, block connects other blocks directly without intermediaries. Thus, no additional fare would be charged because there has no middle organization providing services between blocks when transactions happening. All nodes in the same blockchain network have same weighting for verifying transactions after they sending requests (Shrier, Wu and Pentland, 2016). The verified transactions are saved in the blockchain permanently, all saved data cannot be modified or deleted. The encryption method is adopted in blockchain, each transaction is encrypted by secure hash algorithm and digital signature for the safety and privacy. Based on those characteristics of blockchain, the idea of Blockchain Donation Model (BDM) is appeared.

The motivation of BDM is arisen from problems of the current donation systems. Nowadays, currency donation is the common donation behaviour, which often occurs in donors allot their money to the specific organizations or government departments. Then, the decision power of the donations distribution is all on those organizations which receiving the donations, most donors could only expect or trust their donations are passed on to the people who really need help. However, the policy of donation transmission and the rules of donees choose from the third party to the donees who are suffered from natural disasters, political affairs or social violence etc. are always ambiguous. Hence, donors have no ideas where their donations are used to, and what they are used for. In order to solve the problems mentioned above, the objectives of BDM is to change current donation mechanism and solve the problems occurred in it. BDM is designed based on the methodologies of blockchain that records where is the donation from and where is it spent for. Besides, the transmission pathway of each donation is recorded in detail starting from donors toward the donees. In order to enhance the donation to be used in a proper way, each donation will be seen as a transaction in BDM, each transaction will be recorded in detail and transparently. For safety and privacy reasons, each of them will be secured by secure hash algorithm and digital signature. BDM might raise the efficiency of the administration works by P2P transmission method, also maintain the database easier and clearer because of the permanent data storage. The main contributions in this paper would be design a donation model with the characteristics of transparent, secure, convenient, no intermediaries transactions, called BDM.

In this article, the methodologies of blockchain which include data storage involves peer to peer, decentralized, data storage, secure mechanism includes hash, digital signature and proof-of-work would be introduced specifically in next section. The blockchain applications in various fields could be mentioned as follows. In the section 4, the BDM illustration which concludes the blockchain network, secure methodologies, transaction procedure, and whole picture of BDM would be proposed. In the section 5,

15 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/donation-model-development-based-on-the-methodologies-of-blockchain/268596

Related Content

A Quality Perspective and Its Importance to Business Competitiveness on Human Resource Information Systems

N. Geethanjali, Kishore Kandepu, Seema Bhakuni, P. Paramasivan, C. Satheeshand J. Rahila (2024). *Data-Driven Intelligent Business Sustainability* (pp. 136-148).

www.irma-international.org/chapter/a-quality-perspective-and-its-importance-to-business-competitiveness-on-human-resource-information-systems/334741

A Survey on Aspect Extraction Approaches for Sentiment Analysis

Vrps Sastry Yadavilliand Karthick Seshadri (2021). *Data Preprocessing, Active Learning, and Cost Perceptive Approaches for Resolving Data Imbalance* (pp. 42-65).

www.irma-international.org/chapter/a-survey-on-aspect-extraction-approaches-for-sentiment-analysis/280910

Feature Selection Using Correlation Analysis for Accurate Breast Cancer Diagnosis

Jasjit Singh, Deepanshu Goyaland Apurva Vashist (2024). *Applications of Synthetic High Dimensional Data* (pp. 107-119).

www.irma-international.org/chapter/feature-selection-using-correlation-analysis-for-accurate-breast-cancer-diagnosis/342988

A Secure Gateway Discovery Protocol Using Elliptic Curve Cryptography for Internet-Integrated MANET

Pooja Verma (2021). *Research Anthology on Blockchain Technology in Business, Healthcare, Education, and Government* (pp. 433-457).

www.irma-international.org/chapter/a-secure-gateway-discovery-protocol-using-elliptic-curve-cryptography-for-internet-integrated-manet/268614

Understanding a Revolutionary and Flawed Grand Experiment in Blockchain: The DAO Attack

Muhammad Izhar Mehar, Charles Louis Shier, Alana Giambattista, Elgar Gong, Gabrielle Fletcher, Ryan Sanayhie, Henry M. Kimand Marek Laskowski (2021). *Research Anthology on Blockchain Technology in Business, Healthcare, Education, and Government* (pp. 1253-1266).

www.irma-international.org/chapter/understanding-a-revolutionary-and-flawed-grand-experiment-in-blockchain/268659