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LETTER TO EDITOR

Evidence Based Health Policy, Management & Economics

Blockchain Technology and the Health System Decentralization

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Dear Editor;

The concept of decentralization has emerged as the basis of health policy reforms in many countries, while it isn't usually used clearly. Decentralization in health system can be categorized into three areas of providing, financing, and planning of health services. Theoretically, decentralization may lead to better conditions of equity, efficiency, quality, and access regarding health care services, and consequently, better public health. Nonetheless, there isn't sufficient evidence indicating whether or not countries with more decentralized health care systems, have higher outcomes and performance (1, 2). Considering that the benefits of decentralization's plans and methods should outweigh the costs (3), it is possible to rely on a blockchain technology, due to better cost reduction, security, speed, and high transparency (4, 5).

The blockchain technology began a new period in 2008 with the introduction of bitcoin. This technology has recently emerged as a deconstructive innovation with different applications, and the potential to redesign our society's interactions, such as business and politics (6). Depending on the application, this technology is divided into three levels including public, private, and consortium. The public and private blockchains have the highest and the lowest degree of decentralization, respectively (7). The main goal of this technology can be decentralization of power, wealth, and information (5, 8, 9). Currently, there is significant progress in the areas mentioned (power, wealth, and information) which includes voting systems, digital currencies and information storage through this system. In the health system, the field of information decentralization is currently active, while there are no effective measures in the other two areas (10).

Smart contract, as one of the most important innovations in the blockchain technology, is defined as a computer contract algorithm reaching the terms of agreement. Furthermore, Othere have considered it an agreement that is automatically reached (11). However, these contracts provide the basis for further innovations on the blockchain platform, such as the design of Decentralized Autonomous Organizations (DAOs), the decentralization of financing systems with Decentralized Finance

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(DeFi) projects, and the elimination of financial intermediaries in the system. (12, 13). Given the increasing number of the papers in this field in developing human knowledge, from 19 in 2013 to 2755 in 2018 (14), this technology can be considered an initiator for decentralization of health systems.

According to the authors' opinions, the health system, due to its high capacity to decentralize information, planning and financing, can use the concepts mentioned above, to design new mechanisms in accordance with its accepted principles (e.g., the gatekeeper system and the family physician should integrate resources and strategic purchasing). In addition, it could establish a new system with minimum central government intervention, in which the voting system leads to optimal disclosure and meeting the local needs and allocating resources. In this regard, researchers believe, using local knowledge to meet local needs and preferences, known as decentralized planning, is superior to "Stalinist" centralized planning (15). Moreover, people's information is transferred and is available in the most secure condition. Also, decentralized financing system eliminates financial intermediaries through smart contracts, because trust is shifting from institutions and regulations to transparent codes (smart contracts); therefore, blockchain technology can decrease a significant percentage of financial transaction costs by reducing administrative, managerial, regulatory and legislative costs.

In conclusion, by considering the rapid innovations in the design of organizations, it seems that future belongs to automated systems based on smart contracts. Thus, the health systems have to consider reforms in providing, financing and planning for health services, in accordance with this technology. Hence, it would be worthwhile to conduct additional studies to design models based on this technology.

Key words

Distributed ledger technology, Governance, Organization, Smart contracts, Financing.

References

1. Martinussen PE, Rydland HT. Is a Decentralised health policy associated with better self-rated health and health services evaluation? A comparative study of European countries. International Journal of Health Policy and Management. 2021; 10(2): 55-66. doi: 10.34172/ IJHPM.2020.13.
2. Fredriksson M, Winblad U. Consequences of a decentralized healthcare governance model: Measuring regional authority support for patient choice in Sweden. Social Science & Medicine. 2008; 67(2): 271-9. doi: 10.1016/j.socscimed.2008.03.025.
3. Bustamante AV. U-Form vs. M-Form: How to understand decision autonomy under healthcare decentralization?; Comment on "decentralisation of health services in Fiji: A decision space analysis". International Journal of Health Policy and Management. 2016; 5(9): 561-3. doi: 10.15171/IJHPM.2016.73.
4. Boonpheng A, Kongsong W, Usahanunth N, Pooworakulchai Ch. Bringing blockchain technology to construction engineering management. International Journal of Engineering Research & Technology. 2020; 9(01): 172-7. doi:10.17577/IJERTV9IS010037.
5. Chen Y, Bellavitis C. Blockchain disruption and decentralized finance: The rise of decentralized business models. Journal of Business Venturing Insights. 2020; 13: e00151. doi: 10.1016/j.jbvi.2019.e00151.
6. Atzori, M. "Blockchain technology and decentralized governance: Is the state still necessary?". Journal of Governance and Regulation. 2017; 6(1): 45-62. doi: 10.22495/ jgr_v6_i1_p5.
7. Bhuvana R, Aithal PS. RBI distributed ledger technology and blockchain-a future of decentralized India. International Journal of Management, Technology and Social Sciences. 2020; 5(1): 227-37. doi: 10.47992/ IJMTS. 2581.6012.0091.
8. Pagnotta ES. Decentralizing money: Bitcoin prices and blockchain security. The Review of

[DOI: 10.18502/jebhpme.v6i3.10853]

Financial Studies. 2022; 35(2): 866–907. doi: 10.1093/rfs/hhaa149.
9. Zyskind G, Nathan O, Pentland AS. Decentralizing privacy: Using blockchain to protect personal data. San Jose, CA, USA: IEEE; 2105. p.180-4. doi: 10.1109/SPW.2015.27.
10. Drosatos G, Kaldoudi E. Blockchain applications in the biomedical domain: A scoping review. Computational and Structural Biotechnology Journal. 2019; 17: 229-40. doi: 10.1016/j.csbj.2019.01.010.
11. Naser M, Sadeghi H. Validation and expression of legal challenges in the application of smart contracts: Comparative study in the Iranian and American legal system. Private Law Research. 2019; 7(27): 225-88. doi: 10.22054/JPLR. 2018.28418.1755. [In Persian]
12. Singh M, Kim Sh. Blockchain technology for decentralized autonomous organizations. Advances in Computers. 2019; 115: 115-40. doi: 10.1016/bs.adcom.2019.06.001.
13. Schär F. Decentralized finance: On blockchain-and smart contract-based financial markets. FRB of St Louis Review. 2021; 103(2): 153-74. doi: 10.20955/r.103.153-74.
14. Dabbagh M, Sookhak M, Sohrabi Safa N. The evolution of blockchain: A bibliometric study. IEEE Access. 2019; 7: 19212-21. doi: 10.1109/ACCESS.2019.2895646.
15. Qian Y, Roland G, Xu Ch-G. Coordination and experimentation in M-form and U-form organizations. Journal of Political Economy. 2006; 114(2): 366-402. doi: 10.1086/501170.

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