

Finite and Infinite: Reconstructing the Communication Contract of Public Opinion Events from the Perspective of Blockchain

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Abstract: With the gradual application of blockchain technology in the new media sector, social networking sites based on blockchain technology have emerged. In light of blockchain technology and information dissemination theory, this study will focus on the dissemination model of public opinion on social networks under blockchain technology, demonstrating the role of blockchain technology in optimizing the public opinion ecosystem, and provide some theoretical basis and support for its wide application in social platform dissemination, and optimize the online environment.

Keywords: Blockchain; Public Opinion Network; Communication Contract.

1. Introduction

According to the American Bar Association's Restatement of Contracts, a contract is "a promise or series of promises that, under certain circumstances, is legally recognized as binding upon the performance of the promise." A communication contract, on the other hand, means that during the dissemination of information, the disseminator's speech is subject to legal or platform rules, and the disseminator is responsible for their speech, thus forming a contractual relationship. In the information age, the rise of social media and the resulting expansion of public opinion power brought about by the empowerment of new media are continuously eroding the traditional information environment. In recent years, negative public opinion sparked by false information on the internet has become a major cause of many social conflicts, and the challenges facing public opinion dissemination have become increasingly severe. Against this backdrop, blockchain technology, with its advantages of "immutability," "traceability," and "distributed ledger," can rapidly process online public opinion, reduce false online public opinion, and reduce the frequency of public opinion crises, thereby rebuilding the communication contract and intelligently optimizing online public opinion. Regarding the application of blockchain technology in the public opinion arena, academics hold the following viewpoints: Blockchain will enable the reconstruction of the public opinion environment as the internet evolves from unstructured to structured data [1]. This will further expand the space for information dissemination and effectively integrate fragmented information into public news bulletin boards, contributing to a "distributed-aggregated" information dissemination model and reconstructing post-truth [2]. Blockchain technology has strong technical advantages in the application of online rumor governance, public opinion analysis and guidance, etc. It can promote the innovation of the governance model of the cyberspace community with a shared future and realize the precision, service, personalization and customization of governance [3]. It can also create a "blockchain + online public opinion guidance" application scenario, fostering a collaborative communication landscape, guiding audiences back to value rationality,

clarifying the online public opinion environment, and enhancing online public opinion guidance [4]. Scholars' research examines the impact of blockchain on the reconstruction of the public opinion field, the construction of post-truth, and cyberspace governance. While relevant research is closely related to public opinion dissemination, specific studies on the impact of blockchain technology on public opinion dissemination are lacking. Based on a summary of existing literature, this study will take the Steemit social networking site as an example and explore its public opinion dissemination model to answer three questions about public opinion dissemination under blockchain technology: first, the public opinion dissemination process driven by blockchain technology; second, what advantages does it have compared to social media that do not use blockchain technology; and third, what issues deserve attention when using blockchain technology.

2. Limited: Rationally Controlled Public Opinion Spread

Steemit is a leading online public opinion platform within the blockchain environment, serving as a high-quality content creation and sharing community. Therefore, this study uses Steemit as an example to explore the dissemination pathways of online public opinion within the blockchain environment, summarizing its characteristics and patterns.

2.1. Miners: Contractually Rational Supervisors

As consumers of information, audiences enter into a tacit contractual relationship with media outlets during their transactions. This unwritten contract requires audiences to pay attention, and media outlets to provide authentic, valid information of equal value. However, this isn't always the case. Driven by vested interests, media outlets may offer false information to attract attention.

In traditional information dissemination models, six elements—information source, disseminator, recipient, message content, dissemination medium, and feedback mechanism—are widely recognized and considered fundamental. Given the unique characteristics of blockchain systems, this framework requires adjustments when applied

to analyzing public opinion dissemination on Steemit. Specifically, public opinion dissemination on the Steemit network involves the following key roles: information producers, information disseminators, information disseminators, information receivers, and miners. Miners play a particularly crucial role. They are individuals or machines dedicated to creating information blocks and successfully adding them to the blockchain system. Miners' activities not only provide essential technical support for information dissemination on the blockchain but also are crucial to ensuring the sustained and stable operation of the entire blockchain public opinion network.

Suppose users A, B, C, and D are social friends on the Steemit network. When A posts a message, A becomes the public opinion disseminator. C and D do not forward the message, becoming temporarily immune to the public opinion. B forwards the message, becoming both the recipient and disseminator. C and D then receive a second transmission of the message and can decide again whether to forward it. In this dissemination process, public opinion producers publish text, images, videos, and other information, breaking it down and disseminating it. They also act as recipients, receiving additional information. Disseminators, upon receiving public opinion information from others, can choose to forward and share it. A key difference from traditional public opinion dissemination is that miners must participate throughout the entire dissemination process, encrypting, verifying, broadcasting, and storing every piece of information, from its source and transmission path. Miners play a crucial role in overseeing the invisible contractual relationship between senders and recipients and safeguarding the rights of the audience.

2.2. Benefits: Contract Maintenance for Moderation Thinking

A major advantage of Steemit is its integration of blockchain technology and economic logic. The platform encourages users to publish original content. All user-generated information is immutably stored on the public Steem blockchain. The platform rewards users with Steem tokens (a virtual currency), fostering the production and dissemination of original, high-quality content. Every user on Steemit has a reputation and the opportunity to earn token rewards. Tokens and reputation points are awarded for posting, commenting, and forwarding. To maximize these tokens and reputation points, users prioritize high-quality content when posting and forwarding. Furthermore, if information is later proven to be false or harmful, both the publisher and the user who forwarded it will be deducted a certain amount of tokens and reputation points. This indirectly safeguards the dissemination contract through the use of user token earnings and reputation points. Blockchain technology's immutable content and distributed ledger ensure that information posted on social networking sites cannot be altered at will, and the entire dissemination path of the information can be traced. Therefore, before disseminating information, disseminators can roughly assess the credibility of the source and make prudent decisions about whether to forward it. Therefore, on the Steemit website, users are more cautious about publishing and forwarding public opinion information, and rarely forward and share unverified public opinion information at will.

Economist Arrow proposed the principle of "bounded rationality," which refers to rationality within certain limits,

somewhere between perfect rationality and imperfect rationality. Barnard, building on this principle, proposed the concept of "bounded rational man." This concept also applies to social networking sites and is ubiquitous. The token incentive mechanism of blockchain-based social networking sites targets users who share high-quality information. Therefore, the same user may develop varying attitudes towards the same information over time. For example, user C, mentioned earlier, accepted but did not share the information posted by A the first time he received it. However, as other users commented and shared it, C was highly likely to share it the second time he received it (By sharing A's post), motivated by the desire for profit. Therefore, on blockchain-based social networking sites, a Matthew effect occurs, whereby high-quality resources receive more support and sharing.

3. Infinity: Positive and Equal Public Opinion Dissemination

By analyzing the public opinion dissemination process on the Steemit social networking site, we found that compared with the public opinion dissemination in traditional social networks, the public opinion network dissemination model based on blockchain technology has the following advantages.

3.1. Positive Drive: Equal Benefits

Compared with traditional social network public opinion dissemination, the biggest difference of the social network public opinion dissemination model based on blockchain technology lies in the dissemination behavior of users themselves, and the spirit of dissemination contract based on economic interests is more solid. First, compared to traditional social networking sites, blockchain public opinion networks have fewer users involved in producing and forwarding public opinion information, and dissemination behavior is more rational, with forwarding occurring only for reliable and valuable information. Information publishers will carefully consider the costs of publishing and forwarding rumors, and blockchain technology will record their fabrication and rumor-mongering behavior, impacting their credibility. Consequently, the production of spam and the spread of false information are curbed, while high-quality information is highlighted, potentially reshaping the public opinion ecosystem. Secondly, a key feature of blockchain public opinion networks is their ability to measure the value of public opinion information in monetary terms, awarding or deducting a certain number of tokens based on the authenticity of the information forwarded by users. Public opinion network users, driven by expected returns, are more enthusiastic about producing and forwarding public opinion information after confirming its authenticity. High-quality information sharing enables users of blockchain public opinion networks to enjoy a better information consumption experience. Forwarding behavior driven by economic interests is more enthusiastic, but concerns about lost profits make forwarding behavior more rational.

3.2. Equal Responsibility: Decentralization

Miners, as a key element in the information dissemination process within blockchain public opinion networks, are the core practitioners of blockchain technology's "decentralization" and oversight of dissemination contracts, playing a crucial role in the system. Whether it's information

production or information dissemination, it must undergo encryption, verification, storage, and broadcast by miners before it can enter the next stage of information transmission. Precisely because of this, the spread of blockchain public opinion information is slower than that of traditional public opinion, and the process of quantitative change to qualitative transformation takes longer.

In the process of blockchain public opinion network dissemination, there is no obvious central node, and the rights and obligations of each node are nearly equal. The characteristic of "distributed storage" ensures that tampering or destruction of data on a single node will not affect the data stored on the blockchain. It is generally believed that most information dissemination networks on the Internet are small-world networks [5]. The characteristics of the blockchain public opinion network described above demonstrate significant differences in information dissemination from traditional small-world networks. According to the definition of a scale-free network, a scale-free network is a complex network characterized by a characteristic in which most nodes are connected to only a few nodes, while a very small number of nodes are connected to a very large number of nodes. The presence of these critical nodes makes scale-free networks highly resilient to unexpected failures. Therefore, it can be inferred that the blockchain public opinion network is a scale-free network similar to the public opinion dissemination of WeChat public accounts [6]. The final results still need to be verified by data.

4. Finite-Infinite: The Conflict between Technology and Contract

While blockchain technology can lay a solid foundation for trust and create a reliable mechanism for cooperation, if used improperly, it can, to a certain extent, fuel the outbreak or evolution of public opinion incidents, distorting the spirit of contractual communication and increasing uncertainty in the development of public opinion incidents.

4.1. Opposing Positions are Highlighted

Most public opinion events are triggered by public interests and demands, and their causes and development are directly related to public attitudes. The book "Social Psychology" discusses how positions and attitudes are influenced by the presentation of relevant evidence. Detailed presentation of supporting and opposing viewpoints, attitudes, and evidence often results not in making the truth clearer but in making those holding different positions and attitudes more resolute in their respective positions and attitudes [7]. Due to the characteristic of blockchain technology that "information cannot be tampered with at will", detailed evidence of opposing attitudes can be presented in public opinion events. All parties involved in the event will obtain increasingly abundant evidence support, and the parties with opposing attitudes will have more and more supporters, their positions will become increasingly firm, and public opinion events may be intensified.

4.2. The Inhibitory Effect Remains to be Studied

Blockchain technology's traceability allows users to easily assess the credibility of information sources. For information related to public opinion outbreaks, users can verify its authenticity by tracing its source. Governments and other

official departments can also use highly reliable information stored in blockchain to guide public opinion. Therefore, blockchain technology can effectively curb the spread of rumors during public opinion outbreaks, and thus, the emergence of secondary public opinion. This is particularly effective for rumors that are repeatedly spread in a rebranded form. However, suppressing rumors does not mean completely preventing them. Due to their simplistic nature, rumors spread quickly and widely. Furthermore, official responses to public opinion events must be extremely timely. Therefore, preventing the spread of rumors during public opinion events requires swift responses and disclosure of evidence. However, blockchain's lack of timeliness conflicts with this high timeliness requirement. Because each piece of information in a blockchain system requires encryption and verification by miners, this results in slow information updates. Clearly, this characteristic of blockchain makes it difficult to prevent the spread and generation of rumors during online public opinion events. Blockchain technology can only suppress, not completely prevent, rumors in public opinion events.

4.3. Past Events have a Negative Impact

In online public opinion events, information from previous events often significantly influences the outbreak and evolution of new public opinion. This influence manifests itself in two main ways: first, previous events serve as a framework for understanding current online public opinion events, guiding public perception and interpretation. Second, key information from previous events can be directly cited or borrowed, becoming a crucial component of new online public opinion events. In blockchain-based social networks, if past events are used as a framework for understanding current events, this influence can potentially exacerbate the situation. The fundamental reason is that blockchain technology allows for more durable information storage, allowing any public opinion event to find similar past events as its own self-constructed cognitive framework. Ultimately, new public opinion events become more intense due to the influence of previous events. If current online public opinion events use information from previous events as details or facts within the current event, this can also exacerbate the situation. This is because blockchain technology fully preserves the information attributes of past events, making them easily accessible to anyone. Overall, the impact of old online public opinion events will be more complicated from the perspective of blockchain technology.

5. Conclusion

Blockchain-based public opinion dissemination networks will impact the reform of online public opinion sources and dissemination channels on social platforms. Blockchain technology can also identify the nature of online information, discern rumors, and promote improvements in the internet's public opinion ecosystem. This research deepens the theoretical application of blockchain technology in the field of online public opinion. On a practical level, it can provide insights for public opinion monitoring centers and cyberspace public opinion governance. It can also help governments rebuild an online public opinion ecosystem oriented toward positive, mainstream public opinion in blockchain-based social networks, where false information is eliminated and users are more rational and enthusiastic. Currently, the practical application of blockchain technology is still largely

at the theoretical exploratory stage, and its application in public opinion networks requires further practical testing. We look forward to its widespread application in public opinion dissemination soon.

References

- [1] Li Taian, Blockchain reconstructs the online public opinion environment: Media, Vol.21(2017), p.87-90.
- [2] Yu Guoming. Feng Fei, Blockchain's Reconstruction of Post-Truth: The Concept of "Dispersion-Aggregation" Model: Modern Communication (Journal of Communication University of China), Vol.41 (2019),p.1-4+11.
- [3] He Guangshou, Research on the Moral Governance of Cyberspace Community of Shared Future Based on Blockchain Technology: Publishing Wide Angle, Vol.20(2019),p.79-81.
- [4] Nie Zhi. Yang Jiangyao, Coupling mechanism and empowerment approach of blockchain and online public opinion guidance: Ideological and Educational Research, Vol. 02 (2024), p.107-112.
- [5] Tang Xiaobo. Song Chengwei, Microblog public opinion analysis based on complex networks: Journal of the China Society for Scientific and Technological Information, Vol. 31 (2012), p.1153-1163.
- [6] Xu Baoda. Zhao Shukuan. Zhang Jian, Research on information dissemination of WeChat public accounts based on social network analysis: Intelligence Magazine, Vol.36 (2017), p. 120-12 .
- [7] David Myers Translated by Zhang Zhiyong. Yue Guoan. Hou Yubo. etc: Social Psychology (Posts and Telecommunications Press, China 2006).