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Research on Governance Strategy of Internet Public Opinion Reversal based on Blockchain Technology

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Abstract: In recent years, the network public opinion reversal governance events have occurred frequently. Over time, the repeated truth of the matter will not only weaken the rational judgment of the public to a certain extent, so that its negative emotions accumulate, but also have a serious impact on the credibility of the media and the government, and may even further intensify social contradictions. Therefore, in the face of such a complex online public opinion space, accurately identifying the truth behind the incident and how to carry out the reversal of online public opinion governance is particularly critical. And blockchain technology, with its advantages of decentralization and immutable information, provides new technical support for the network public opinion reversal governance. Based on this, this paper gives an overview and analysis of blockchain technology and network public opinion reversal, and on this basis introduces the network public opinion reversal governance mechanism based on blockchain technology, aiming to further optimize the network public opinion reversal governance process, for reference only.

Keywords: Blockchain technology; Network public opinion reversal; Governance strategy

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1. Introduction

According to the 55th Statistical Report on the Development of the Internet in China, by December 2024, the number of Internet users in China has reached 1.108 billion, and the Internet penetration rate is as high as 78.6% [1]. It is easy to see that the number of Internet users in China accounts for more than half of the total population. Nowadays, with the continuous expansion of Internet users and the frequent occurrence of social conflicts in the network environment, network public opinion has gradually developed into a common phenomenon in our social life. In this situation, the Internet trust crisis also follows, which will not only greatly reduce the credibility of the media and the government, but also affect the harmony of society and the stability of the country. Therefore, it is of great importance and necessity to strengthen the work of network public opinion reversal governance. Therefore, from the perspective of blockchain technology, this paper tries to explore a new path of network public opinion

reversal governance.

2. Blockchain technology and network public opinion reversal

2.1. Blockchain technology

In a limited sense, blockchain technology refers to a distributed ledger system. This system employs a chain-like data structure that organizes and connects information in chronological order, safeguarding it against tampering or falsification through cryptographic methods [2]. In a broader context, blockchain serves as a novel distributed infrastructure and computational model. It enables the storage and validation of data via encrypted blocks while utilizing cryptography to protect data ownership and secure access permissions [3]. The fundamental architecture of this technology is depicted in **Figure 1**.

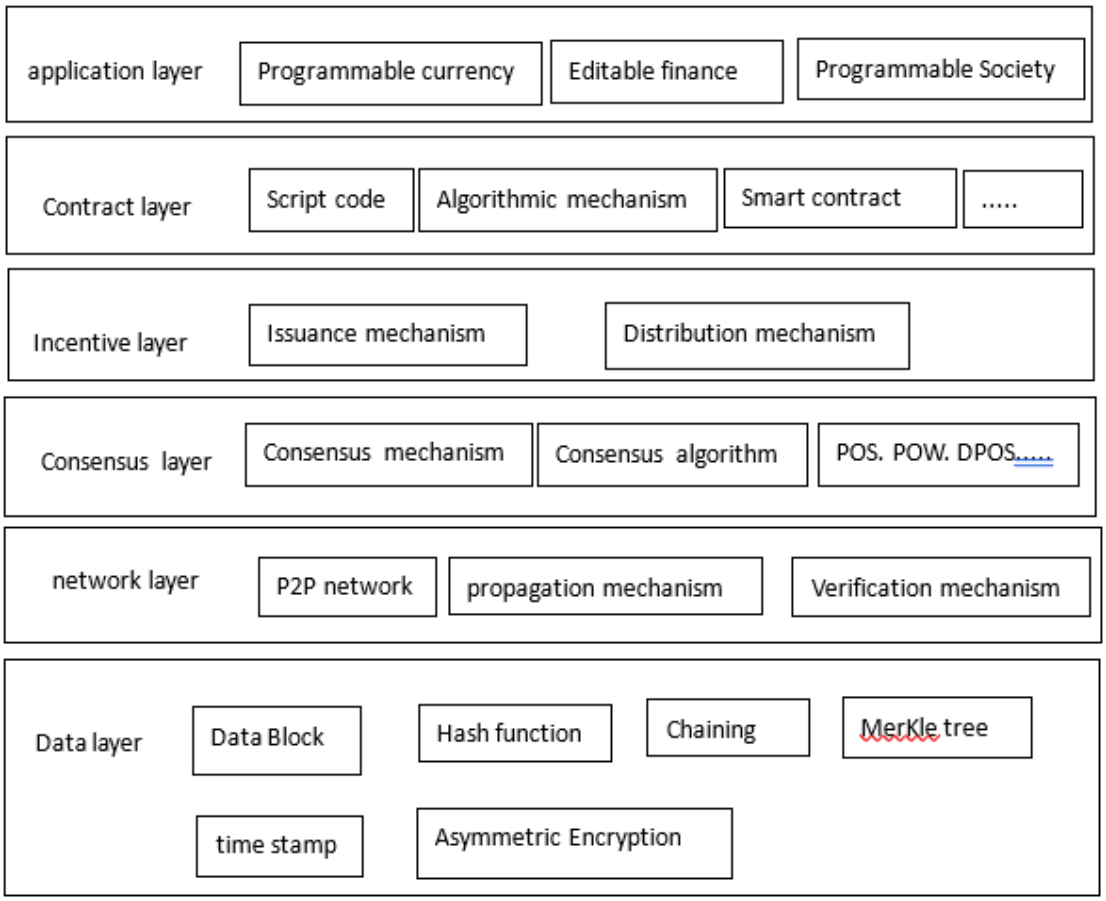

Figure 1. Basic architecture of blockchain technology

2.2. Network public opinion reversal

The phenomenon known as the reversal of network public opinion occurs when concealed or distorted facts posted and spread online gain significant public attention and spark intense debate. Subsequently, additional truths emerge, leading to a complete shift in people's attitudes and perspectives regarding the event [4]. At its core, this reversal reflects a specific instance of information asymmetry.

In general, the dissemination of network public opinion reversal events exhibits the following characteristics: First, the spread of these events is rapid and occurs at a high frequency. Leveraged by network technology,

information can be disseminated broadly within a short timeframe. This significantly increases the challenge for the public to differentiate between true and false information, potentially leading to frequent occurrences of online public opinion reversals. Second, event information tends to be fragmented and disjointed. As society has transitioned into the age of information and data intelligence, new media technologies have rapidly advanced and been widely adopted, giving rise to numerous additional forms of new media. While this has greatly propelled the transformation and development of the news industry, it has also indirectly heightened market competition within the media sector. Consequently, in pursuit of greater traffic, the media industry often prioritizes timeliness over factual accuracy when reporting on news events, sometimes even resorting to labeling news stories. Consequently, it frequently proves challenging for the general public to fully comprehend the essence of an issue within a brief timeframe. They may even form "preconceived notions" influenced by media coverage, which can impair their ability to make objective judgments. Furthermore, such piecemeal information dissemination can mislead the public, exacerbating instances of public opinion reversals. Additionally, the emotional undertones are often pronounced. Typically, emotionally charged interpretations of events resonate more strongly with the public, making them more persuasive. Under the influence of the primacy effect, when a particular idea or emotion gains prominence, the factual basis of the public opinion event itself tends to become secondary. Ultimately, emotions steer the trajectory of public discourse rather than the event itself. At this juncture, only the introduction of new counterinformation can gradually restore public rationality and encourage a reevaluation of the truth behind the public opinion event. For example, the "Wang Fengya incident" received little attention at the beginning, but after more than a month, the anti-transfer of public opinion reached its peak in an instant, and the relevant Weibo topic was discussed 330,000 times. As additional fragmented details about the incident were revealed, public sentiment underwent a shift. Initially, netizens criticized Wang Fengya's family, but later redirected their accusations toward Chen Lan and volunteers, alleging they fabricated falsehoods. Additionally, major online influencers, such as "We media," and certain media outlets were criticized for uncritically following trends without proper verification [5]. This demonstrates that shifts in online public opinion often exhibit pronounced emotional traits.

2.3. Feasibility of network public opinion reversal governance based on blockchain technology

First, leveraging its decentralized technical features, blockchain can create a consensus mechanism at designated authoritative nodes, effectively preventing the generation and spread of fake news on social media right from the source. News must be verified before it can be published on media platforms and disseminated across the network. During the review process, in addition to authoritative nodes, other nodes within the chain can also participate in supervision and evaluation. This significantly enhances the transparency of events and establishes a robust foundation for the identification and tracking of false news and related information [6].

Secondly, blockchain can effectively supervise and constrain the network behaviors of people in media platforms by its autonomous technical characteristics, which is conducive to reducing the regulatory burden of social media platforms and promoting the construction of a healthy online public opinion ecological environment. Specifically, there is a network behavior incentive mechanism in the blockchain, which can encourage people to rationally express their online public opinion. At the same time, blockchain also builds smart contracts on social media platforms, which can better guarantee the automated execution of transactions.

Finally, due to the unchangeable nature of blockchain technology, information shared by individuals on social media can be monitored across the entire network and remains secure from alteration. As a result, relevant

government agencies can trace the origin, dissemination paths, and participants involved in fake news [7]. Particularly in cases where online public opinion incidents significantly impact society, blockchain technology enables the government to identify the source of false information, malicious disseminators, and participants more swiftly and precisely, allowing for appropriate accountability measures. This serves as a deterrent to user actions on social media platforms, encouraging them to express public opinions more rationally.

3. The network public opinion reversal governance mechanism based on blockchain technology

3.1. Network public opinion reversal governance technology framework based on blockchain technology

On the basis and basis of the construction of the above blockchain technical architecture, the network public opinion reversal governance blockchain network technical architecture is constructed, as follows:

The application layer consists primarily of two components: The user system and the data traceability platform. These provide an effective front-end interface that enables platform users to engage in interactive web-based applications. The user system must allocate permissions based on user roles, facilitating the efficient execution of news event reviews and platform content management, as outlined in reference [8]. Meanwhile, the data traceability platform focuses on verifying the origins of various public opinion incidents, serving as a critical tool for government agencies to identify the sources of misinformation and hold malicious disseminators accountable.

The contract layer should contain a variety of smart contracts, the purpose of which is mainly to ensure that smart contracts can be automatically executed even in the case of non-human intervention. When the social media platform wants to publish a news event, it will first trigger the relevant smart contract in the blockchain, which will be reviewed and verified by the authoritative node, supplemented by other nodes on the blockchain. After the verification and verification is passed, the news event can be published.

The consensus layer incorporates the consensus mechanism among network nodes, ensuring that each node in the blockchain aligns with audit and verification processes. If a node fails to fulfill its responsibilities, its credibility score will be reduced accordingly. Should the score drop below the predefined threshold, the node will lose its eligibility to participate in the consensus process. Additionally, by leveraging blockchain technology, it is necessary to synchronize updates across all nodes within the network topology. This ensures that every node maintains a consistent consensus algorithm, thereby minimizing the occurrence of faulty nodes.

The network layer serves as the core for reviewing and supervising the origin of news events. It consists of multiple nodes and adopts a P2P distributed network architecture. Within this structure, two key types of nodes play critical roles. The first is the news event review node within the alliance chain, which includes news organizations, authoritative media outlets, and professional journalists. This node primarily focuses on verifying the authenticity of news events published by social media platforms. The second is the public opinion supervision node in the alliance chain, comprising various network oversight departments such as public security and telecommunications management agencies. This node is responsible for overseeing online public opinion, managing news reviews, tracing the origins of news transmissions, and subsequently imposing appropriate penalties on relevant entities involved [9].

The data storage layer is mainly responsible for classifying all kinds of online public opinion event information according to different categories and storing it in different information blocks, including user

registration information on social media platforms, transmission path of online public opinion events, news sources, and other data information.

3.2. Construction of the network public opinion reversal governance system based on blockchain technology

3.2.1. News source verification mechanism

The criteria and expectations for news publication on social media platforms tend to be relatively lenient, resulting in inconsistent news quality. Additionally, during online public opinion reversal incidents, a significant amount of information is intertwined with truth and falsehood, making it challenging to accurately differentiate between the two [10]. In response to this issue, there is potential in integrating blockchain technology into social media platforms and establishing a corresponding dual-tier verification system for news sources, specifically, a news examination process and a factual validation process. This could offer a more robust framework for government entities to effectively manage and address network public opinion reversals.

In particular, the news source verification mechanism may also be referred to as a proactive prevention system. Initially, within the public blockchain, the node responsible for generating news will record various types of news source data, including details such as the origin of the news, its publication time, and the reputation score of the node that disseminates it [11]. Furthermore, this generating node will digitally sign these foundational pieces of information and transmit them in a bundled format to the consortium chain. Subsequently, the consortium chain will undertake the task of verifying the legitimacy of both the data and the associated news events. Next, within the consortium chain, upon receiving the packaged news content from the generating node, the review node is tasked with cross-referencing this content against an existing database to ascertain whether it has already been recorded. On one hand, if the news is identified as already present in the database, the system will automatically examine its specific labeling. Should the news be flagged as false, it will not proceed to publication, and both the news item and the review outcomes will be sent back to the generating node. Conversely, if verified as legitimate, the news can then be published onto the public chain and propagated across the network [12]. On the other hand, if no prior record of the news exists within the database, the relevant findings will promptly be relayed to the affiliate chain, which will conduct a secondary authenticity check. Regarding the news review node, it possesses the capability to assess the credibility of news events by considering factors such as the reputation score and the nature of the news event originating from the production node.

The mechanism for fact verification can also be referred to as the in-process verification system, which typically takes place during the dissemination of news events on social media platforms [13]. Once news is released on the public chain of social media and begins spreading throughout the network, this mechanism is activated. Its operational process is outlined below: Initially, a dedicated news bulletin board is promptly established on the social media platform. Subsequently, the news verification node submits relevant data and information about the news event for validation. The verified news information must then be encrypted with a private key and digitally signed. This package includes details such as the ID of the verified news, additional content, and the credit value of the node, before being transmitted to the alliance chain for further review. The news verification node must evaluate both the results of the news verification and the reputation score of the originating node to provide feedback on the review outcome. This result is then disclosed publicly across all nodes and the news bulletin board. Additionally, nodes that are geographically or contextually close to the news event and possess a high reputation score should be invited to contribute supplementary information, which will also be displayed on the

bulletin board. This approach aims to enhance the authenticity and accuracy of news events, thereby establishing a multi-party evidence chain for verification purposes.

3.2.2. Public opinion ecological autonomy mechanism

Supported by blockchain technology, the governance of online public opinion reversals can attain ecological autonomy. Initially, within the public chain, for news sources that remain unverified yet have been widely shared across the internet, public opinion participant nodes in the chain can request to join discussions regarding the news event [14]. The primary criterion for approving such requests is whether the node's credit score or its authority value meets the predefined minimum threshold. This process helps filter out malicious nodes to a certain extent. Once a node's application is approved, it can express its views and opinions on the news event and even share the event further. However, if the shared news turns out to be false, the node's reputation score will decrease accordingly; otherwise, it will increase. Additionally, when a public opinion participant node posts its views on social media platforms, other nodes within the platform can either endorse or oppose these views. Ultimately, the platform ranks the comments based on the total number of endorsements or oppositions. Typically, opinions and ideas with broader acceptance rank higher and receive a credit bonus, as do their supporters.

3.2.3. Government accountability mechanisms

Creating a government accountability mechanism within social media platforms can play a significant role in regulating individuals' online activities and encouraging rational discussions regarding online public opinion events to some extent. Notably, people's involvement in online public discourse leaves digital footprints that are both recorded on the internet and traceable. This serves as a critical source and essential foundation for government entities to explore internet responsibility [15]. Consequently, it is crucial for major media platforms to appropriately and comprehensively preserve data and information associated with news events, thereby fulfilling the requirements of governmental accountability and network oversight more effectively. Furthermore, government agencies can leverage the public opinion supervision nodes within alliance chains to track the origins of false news, identify publishers and disseminators of negative public opinion, and thus accomplish the objectives of accountability and supervision. Upon initiating traceability, the data traceability platform will authenticate the identity of the originating node and promptly provide the final verification results to the public opinion supervision node. Once verification is successful, the public opinion supervision node can access all data information related to the news event and subsequently pursue offline accountability for those responsible for public opinion reversals.

4. Conclusion

All in all, in the context of the "Internet +" era, blockchain technology has been rapidly developed and widely applied, which undoubtedly provides more possibilities for the dissemination of online public opinion. Specifically, the effective governance of the reversal of online public opinion can be realized through the construction of, news source verification mechanism, a public opinion ecological autonomy mechanism, a government accountability mechanism, and other means of blockchain technology.

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References

[1] Yu S, Bian J, Gao T, 2025, Research on Network Public Opinion Reversal Path based on Fuzzy Set Qualitative Comparative Analysis. Competitive Intelligence, 21(01): 10–18.

[2] Jiang C, Xu S, Li F, et al., 2024, Research on Multi-stage Governance of Inverted Network Public Opinion based on Evolutionary Game. Journal of Wuhan University of Technology (Information and Management Engineering), 46(03): 392–401.

[3] Bu Z, 2024, Research on Network Public Opinion Inversion Prediction of Public Health Emergencies, dissertation, Jilin University.

[4] Zhang L, Yi S, Wang H, et al., 2024, Study on the Formation Path of Public Opinion Reversal of Emergencies from the Perspective of Symbiosis Theory — Based on Qualitative Comparative Analysis of fsQCA. Information Science, 42(06): 74–82.

[5] Zhang J, Zhang P, Lan Y, et al., 2023, Construction and Empirical Research of Network Public Opinion Inversion Recognition Model based on Dynamic Topic Clustering. Information Theory and Practice, 46(10): 174–181 + 129.

[6] Li R, 2023, Evolution Process Analysis and Trend Prediction of Network Public Opinion Reversal, dissertation, Huazhong University of Science and Technology.

[7] Zhang S, 2023, Research on Construction and Prediction of Network Public Opinion Inversion Feature Set, dissertation, Hebei University of Technology.

[8] Gao Y, 2023, Research on Generating Mechanism and Forecasting of Network Public Opinion Inversion from the Perspective of Information Ecology, dissertation, Yanshan University.

[9] Zhu G, 2023, Derivative Risk and Its Transmission in Network Public Opinion Reversal Event: Type Classification and Resolution Strategy. Journal of Jishou University (Social Sciences Edition), 44(03): 99–111.

[10] Zhang Y, Gao Y, Song W, et al., 2023, Research on Generating Mechanism of Internet Public Opinion Reversal from the Perspective of Information Ecology — Qualitative Comparative Analysis of Fuzzy Sets based on 40 Cases. Information Science, 41(03): 66–73.

[11] Li W, Jiang H, Zeng F, 2022, Research on Generating Mechanism of Network Public Opinion Reversal Strength for Public Emergencies — fsQCA Analysis based on Multiple Cases. Chinese Journal of Information, 41(11): 129–136 + 54.

[12] Wu X, 2022, Research on Influencing Factors and Driving Path of Network Public Opinion Reversal in Emergencies, dissertation, Hunan Agricultural University.

[13] Jia M, Liu Q, 2021, Analysis on the Mechanism and Countermeasures of Network Public Opinion Reversal Event. Science and Technology Communication, 13(16): 139–141 + 145.

[14] Jia M, Liu Q, 2021, Research Progress and Review of Network Public Opinion Reversal. News Research Guide, 12(13): 50–52.

[15] Liu Q, 2020, Research on Viewpoint Evolution and Sentiment Analysis of Network Public Opinion Reversal, dissertation, Huazhong University of Science and Technology.