BAB 2 literature review

2.1 Introduction

In recent years, with the rapid rise of social media in China, cross-platform public opinion tracking and analysis has become a hot topic in the research field. Researchers pay wide attention to the platform characteristics, user behavior, public opinion communication path and the application of key technologies. At the same time, the far-reaching influence of public opinion on enterprise business activities and government decision-making is also gradually emerging. Especially in the spread of network rumors and the management of social expectations, its intervention effect on economic and social operation has attracted more and more attention. This section provides a systematic review of relevant literature, covering the communication mechanism of public opinion, short essays and emotional analysis, application of key articles, technologies, social impact of Internet rumors, and public opinion response in government decision-making.

2.2 Public opinion communication mechanism

The basic mode of public opinion communication is divided into two categories: user-generated content communication and platform algorithm recommendation. The propagation of user-generated content is profoundly influenced by the structure of social networks and user interaction patterns. Liu et al. (2020) pointed out that information transmission has a significant homogeneous aggregation effect, and the intensity of transmission between different groups is regulated by social capital and interest labels.

On the other hand, the platforms recommendation algorithm further shapes the information transmission path by optimizing the users stay time and participation

rate (Zhang & Sun, 2022). The heterogeneity of communication path aggravates the complexity of public opinion between platforms, and puts forward higher technical requirements for public opinion tracking and analysis.

2.3 Short text and emotion analysis

2.3.1 Short text processing

Online short texts (such as microblogs, comments) are often incomplete semantically due to their informality and simplicity, which brings significant challenges to natural language processing (NLP). Sun et al. (2021) pointed out that there are many ellipsis, emojis and non-standard expressions in short texts, which are difficult for traditional syntactic analysis methods. The pre-trained model based on Transformer (e. g., BERT, GPT) makes up for the lack of information in the short text through context modeling and semantic extraction at the subword level.

2.3.1 sentiment analysis

As an important tool for public opinion research, emotion analysis has developed from a single emotion classification to multi-dimensional emotion modeling, including emotion intensity, emotional transition pattern, and implicit affective expression (Liu et al., 2022). The emotion analysis model based on LSTM and Transformer can capture the dynamic changes of users emotions in the timeline, and provide theoretical support for public opinion prediction and response (Yu et al., 2023).

2.4 Application of key technologies

2.4.1 Long-and Short-term Memory Network (LSTM)

LSTM performs well in processing time series tasks, so it is widely used in the field of public opinion analysis. Phaladisailoed and Naruetharadhol (2019) showed that LSTM is better than traditional statistical models in capturing dynamic changes in public opinion. In addition, the LSTM model incorporating multimodal data (including text and pictures) significantly improves the accuracy of emotion prediction (Chen et al., 2021).

2.4.2 Transformer architecture and pre-training model

Transformer Effectively capture the context information through the multi-head self-attention mechanism, and perform well in short text processing and emotion analysis. Xu et al. (2023) showed that emotion classification models based on BERT showed significant advantages in dealing with short texts on heterogeneous platforms.

2.4.3 Large Language Model (LLM)

Large language model (such as GPT-4) can be applied to complex public opinion analysis tasks due to its strong generation and understanding ability. Kristjanpoller et al. (2021) used LLM to achieve emotional trend prediction in social media, and assisted in policy formulation and the construction of public opinion simulation scenarios.

2.5 Social and commercial impact of Internet rumors

2.5.1 Rumor communication mechanism

Research has shown that online rumors attract attention through emotional language and show a multilevel diffusion path (Wang et al., 2022). The platform algorithm has further amplified the influence of these diffusion paths, resulting in the rapid diffusion of public opinion with unreal content.

2.5.2 Influence on society

Online rumors may lead to social panic, policy misleading and declining public trust in authorities. For example, during the COVID-19 outbreak, the spread of misinformation exacerbated social unrest and interfered with the implementation of government public policy policies (Kim & Park, 2021).

2.5.3 Impact on the business activities of enterprises

The impact of Internet rumors on enterprise business activities is reflected in the following aspects:

(a) Brand reputation: Negative rumors may lead to a decline in consumer brand trust in the company, which will directly affect sales performance. Chae et al. (2022) found that if enterprises fail to respond to online rumors in time, the negative impact of the brand may last for more than half a year.

(b) Supply chain and operational disruptions: Some rumors may mislead public awareness of the quality or safety of products, leading to

product recalls or sales stagnation. A typical case is large-scale returns due to rumors (Li et al., 2023).

(c) Stock market volatility: Financial rumors usually directly affect the stock price volatility of listed companies. Rahman et al. (2021) found through empirical research that the stock market turmoil caused by negative rumors will aggravate the capital flow pressure of enterprises, and may affect the investment strategy of enterprises.

2.5.4 Governance strategy

The rumor monitoring system combining LSTM and Transformer model has been widely used in business environments to quickly identify rumor spreading trends and generate coping strategies. In addition, using the large language model to generate "rumor refuting" content, it can effectively control the spread range of rumors in the early stage of communication (Chen et al., 2021).

2.6 Contradiction between government decision-making and public expectations

The governments decisions in response to public events are inconsistent with public expectations, which often leads to secondary public opinion and aggravates social antagonism.

2.6.1 Decision lag and information asymmetry

In a public crisis, the government releases a delayed response due to the lag in the information collection and processing process, which contradicts the publics high expectation for instant information transparency (Zhou & Zhang, 2022). When there is a significant gap between public opinion demands and government actions, the publics trust in the government may decrease significantly (Wang et al., 2021).

2.6.2 Information release and public credibility construction

Public opinion research shows that the transparency and consistency of information release strategy is the key factor to enhance the credibility of the government. Kim et al. (2022) found that the real-time release of official statements and positive interaction with the public can significantly alleviate the publics emotional response.

2.6.3 Technology-assisted decision optimization

The government public opinion monitoring system, which combines big data analysis and machine learning technology, can effectively identify public demands and help optimize policy design. Intelligent response systems based on large language models have been suggested to be used in multi-channel government communication to improve response efficiency and accuracy (Huang et al., 2023).

2.7 Study blank

Despite the important progress in related research, there remain the following shortcomings:

(d) Short text and multimodal semantic understanding: the current semantic fusion analysis of cross-platform short text and multimodal data is still imperfect.

(e) The dynamic relationship between government decision-making and public opinion response: insufficient research on how the government balances its own goals with public expectations, especially the practice in a complex social environment.

(f) ptimization strategies for enterprises to deal with network rumors: The current research pays little attention to how to balance the relationship between brand reputation protection and the continuity of business activities, which needs to be discussed in depth.

(g) Fairness and ethics of public opinion governance: the application of existing technologies against public opinion control, and the long-term observation of social and commercial impact lacks further research.

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