

Research review on the influencing factors of network rumor refuting effect in emergency

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Abstract

In the age of all media, the dissemination of network rumor about emergencies is characterized by circles, diverse forms, strong confusion, and easy emotional contagion, posing serious challenges to the government's emergency management. However, rumor refutation is of great significance for improving the efficiency of network rumor governance and alleviating social conflicts. Therefore, this paper analyzes rumor refutation literature in emergency, summarizes rumor refutation research trend and its influencing factors, and proposes a research framework for rumor refuting effect, as a reference for subsequent research.

Keywords

Emergency; rumor governance; network rumor refutation; influencing factors.

1. Introduction

During COVID-19 epidemic, massive amounts of information about epidemic prevention events spread rapidly in social media, making it difficult for people to find reliable sources of information and scientific guidance, resulting in an "information epidemic". For example, network rumors such as alcohol can cure patients with COVID-19, and then some people to frantically buy medicines, lead to some authoritative media to be questioned. The information epidemic has become a global test and has received widespread attention. With the development of emergencies, false information and network rumors are spread on social media, arousing negative emotions such as panic among netizen, which not only threatens the physical and mental health of netizen, but also seriously damages the image of the government. The dissemination of network rumors in emergencies presents the characteristics of circles, multiple forms, easy flow and deformation, difficult to distinguish between true and false, and emotional, which greatly tests the emergency management capabilities of multiple subjects such as the government, media, and platform enterprises. The governance of network rumors in emergencies is an inevitable requirement for building a digital social governance system of co-construction, co-governance and sharing. Timely, accurate and effective release of rumor-refuting information has become an important starting point for online rumor management in emergencies. network rumors will help to further improve the all-media emergency information dissemination system and create a healthy and clear space, so it has received extensive attention from the government, enterprises and scholars.

In the context of emergencies, the spread of online rumors is deeper, faster and wider than the spread of truth[1]. Due to information asymmetry and differences in users' cognitive levels, people are more willing to believe the information they want to believe. Network rumor governance in emergency is faced with the dilemma of information dissemination, group polarization, unmet audience needs and insufficient joint action mechanism. It is urgent to sort out and summarize relevant research on network rumor refutation in emergency.

To improve the effect of network rumor refutation, this paper summarizes the research on network rumor in emergency. At first,, this paper analyzes the trend and possible hot spot of

network rumor-refuting literature. Then, it sorts out the concepts, theories and methods related to network rumor refutation. Finally, summarizes and integrates the influencing factors of network rumor refuting, and proposes an analysis framework for the effect of rumor refuting, hoping to provide suggestion for network rumor governance.

2. Research trend of network rumor refutation

2.1. Literature search

This article uses the Web Of Science search platform to conduct an advanced search on the subject of Rumor Refutation OR Rumor Dispelling OR Rumor Refuting; the search period is from 2010 to 2022. By eliminating irrelevant and repeated documents, 497 English documents were obtained. From 2010 to 2017, the average number of published articles was less than 50, and after 2018, it exceeded 50, which tends to develop gradually. It can be seen that online rumor refutation and online rumor governance have gradually attracted the attention of scholars from all over the world.

Table 1: Dispelling rumors periodical distribution

Journal name	Number
PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS	53
IEEE ACCESS	18
PLOS ONE	13
SCIENTIFIC REPORTS	12
PHYSICAL REVIEW E	11
INFORMATION SCIENCES	7
INTERNATIONAL JOURNAL OF MODERN PHYSICS C	6
APPLIED MATHEMATICS AND COMPUTATION	6

Table1 lists the names of journals with more than 5 rumor-refuting literature, which account for nearly one-third of the total, and mainly concentrated in information science and information systems journals. In recent years, the research on online rumor refutation has shown a trend of interdisciplinary research. From the perspective of information dissemination, it continuously digs into the competitive communication process of rumors and rumor refutation. From the perspectives of management, sociology and psychology, combined with big data Technical analysis of network rumor refutation strategy, rumor refutation subject, rumor refutation effect, and accurate rumor management.

Table 2: Keyword emergence

Key words	Start year	Number
rumor spreading model	2015	33
Epidemic model	2016	23
social network	2017	14
emergency	2018	5
cooperation	2019	2
community structure	2018	7
fake news	2020	6
competitive influence	2020	2
social media	2020	12

Table 2 analyzes English emergent keywords based on Citespace software to find research hotspots. The English keywords are highlighted in Table 2.4. Among them, the keywords with a frequency of more than 10 are mainly rumor spread, information dissemination, etc., and in 2018, we began to pay attention to emergencies, and the COVID-19 epidemic caused a series of rumors, which attracted widespread attention from scholars. Based on social network analysis, some scholars have analyzed the interaction behavior of 5G rumor network social groups, and put forward countermeasures and suggestions for network rumor governance [2]. The development of social media platforms not only facilitates the spread of rumors, but also provides a wide range of channels for the Internet to refute rumors.

3. Literature References

This summary mainly summarizes the related concepts, research theories and methods of online rumor refuting, and the influencing factors of the rumor refuting effect.

3.1. The concept of Internet rumor

3.1.1. Rumor refutation

Online rumor refutation refers to online rumors that spread in social networks, and the behavior of network participants to publish and disseminate rumor information to refute rumors. It is an online rumor governance measure that focuses on the subject, information and scene, and focuses on strategies and timeliness [2]. The methods of refuting rumors mainly include three types: no strategy, self-purification and organization. Non-strategic refutation of rumors usually plays a role in mitigating rumors in the early stage. Self-purification refuting rumors means that the public publishes refuting rumors based on the facts they have, and supplements evidence to clarify the truth. Organizational refutation is the use of news platforms by government agencies and other authoritative departments to quickly refute rumors for major emergencies [3]. The dissemination of online rumor information can curb the spread of rumors to a certain extent and weaken the negative impact of rumors.

3.1.2. Rumor refuter

The main body of online rumor refutation refers to the social entity that participates in the governance of online rumors by generating, publishing and disseminating online rumor information after the occurrence of online rumors [4]. The main body of refuting rumors has formed an understanding that the government and the media are the main body, and non-governmental organizations, platform companies, professional opinion leaders and ordinary netizens are supplemented. Various entities have different advantages and influences in rumor refutation, but various media organizations still occupy a dominant position in information dissemination, and online societies and civil organizations are important forces for the collaborative governance of online rumors. Rumor-refuting websites have obvious territorial orientation, poor public participation channels, and poor feedback. In addition, rumor refutes show higher interest in topics related to rumor refutation information. At present, the collaborative governance of rumors by multiple subjects has become a trend. However, due to the slow update of information, weak interaction, and insufficient participation of market players in rumor-refuting platforms, the functions of rumor-refuting platforms have not been fully utilized. In addition, the joint action of multiple subjects to refute rumors lacks scientific guidance and institutional guarantees.

3.2. Related theories and method

By sorting out the relevant literature on the network rumor debunking research on emergencies, this paper finds MOA model, political communication theory, SOR theory, information ecology theory, backfire effect, 5W communication theory, persuasion theory, etc. Political communication refers to the formal or informal communication process of information

transmission and intelligence exchange conducted by the government in order to achieve its political goals. A complete political communication theory mainly includes four elements: the dissemination of political information, the receiver of political information, the channel of political communication, and the content of political communication. Based on the MOA model and the SOR theory, scholars analyze the audience's acceptance and dissemination willingness to dispel rumors.

The research methods of network rumors mainly include questionnaires, case analysis, social network analysis, QCA, statistical analysis and machine learning methods. With more and more convenient access to network data, the investigation and evaluation of rumor-refuting effects based on network data has become a hot topic in future research.

3.3. Rumor refuting effect

The effect of refuting rumors refers to the degree to which the public accepts the refuting information after receiving the information, and can realize that the information received before is a rumor and agree with the information[5]. This summary mainly introduces the quantification of rumor-refuting effect and the analysis of influencing factors

3.3.1. Quantification of rumor-refuting effect

After the rumor denier releases the clarification information of the rumor, it will have three impacts on the netizen: at the cognitive level, after the audience receives the rumor refutation information, it will cause changes in their own knowledge structure, such as doubts about the rumor, the credibility of the rumor refutation information, The willingness to disseminate rumor-refuting information; at the attitude level, it is reflected in the changes in emotions and attitudes caused by netizen after receiving the rumor-refuting information; the behavioral level is the online and offline interactive behavior generated by netizen after receiving the rumor-refuting information. These three levels are often superimposed on each other.

According to the theory of information dissemination, rumor-refuting effects can be divided into three categories: positive effects, negative effects and no effects. The positive effect is that the change in the recipient of the message is consistent with the intention of the communicator. No effect means that there is no change in the attitude or behavior of the recipient before and after receiving the information. The negative effect means that when the information receiver processes the rumor-refuting information that is contrary to the original attitude, a cognitive bias occurs, which leads to a backfire effect and strengthens the trust in the original rumor.

Since the research on the effect of online rumor refutation is not yet mature, scholars are still in the exploratory stage to quantify the effect of rumor refutation. The effectiveness of refuting rumors is mainly measured from the perspectives of information dissemination theory and attitude change theory. At present, there are four ways to quantify the effect of online rumor refutation: 1) questionnaire survey or situational experiment scale; 2) vote on the effectiveness of rumor refutation; 3) information audience's forwarding, likes, comments and other interactions; 4) formula-based Quantify the effect of refuting rumors.

3.3.2. Research on the influencing factors of rumor refuting effect

Research on the influencing factors of rumor refuting effect Scholars mainly pay attention to the influence of subject characteristics and content characteristics on the effect of rumor refutation. Affected by the credibility of information sources, people selectively believe, accept and spread information according to the source of rumors and rumor-defying information. The government's response strategies (refuting, denying, attacking the rumor maker) can significantly reduce the level of rumor trust, while the refutation strategy significantly reduces the willingness to spread rumors[6]. The mediating and moderating role of government trust level in effective risk rumor management. When the level of government trust is low, attacking rumour-mongers will have a negative effect on risk rumour management. The tone of media

reports regulates the relationship between the quality of rumor-refuting information and the effectiveness of rumor-refuting information in crisis situations. When the media report is positive, the quality of rumor-refuting information has no significant effect on the effect of rumor-refuting [7]. The clarification of negative news by the companies involved will have a backfire effect. User's questioning behavior can improve the dissemination effect of online rumor information, but excessive questioning will have a negative effect on rumor control. Content feature analysis. The quality of rumor-refuting information mainly involves the representation and semantic features of the rumor-refuting text.

3.4. Research framework

The dissemination process of online rumor-refuting information is inseparable from the rumor-refuting information, the subject and the situation, and the change of the audience's attitude and behavior is an important manifestation of the rumor-refuting effect. The stronger the public's acceptance of rumor-refuting information, the wider the spread of rumor-refuting information, and the better the resulting rumor-refuting effect. The subjects of online rumor refuting include the government, the media, and the identity of netizens. They take advantage of their own information resources to conduct fact-checking on online rumors, combine public opinion hotspots and netizens' information demands, adopt reasonable rumor-refuting methods and emotional grooming strategies, and organize rumor-clarification announcements [8]. Rumor-refuting subjects push rumor-refuting information through social media or rumor-refuting platforms, and disseminate rumor-refuting information to their fans based on social networks. Social networks are an important channel for the dissemination of information to refute rumors. The social network structure reflects the complexity of the network and the influence of a single node to a certain extent. The social network location of the public and the average degree of the social network will affect the effect of risk communication [9]. Recipients of rumor-refuting information include potential contacts of rumors, those infected with rumors, those who have been cured of rumors, and those who are not interested in rumors. After receiving the rumor-refuting information on the Internet, the audience judges the authenticity of the information, and their attitude towards the rumor-refuting information stimulates individual participation behavior, which is mainly manifested in likes, reposts, and comments. The act of persuading the audience reflects the effect of dispelling rumors. Through social platforms, the subject of rumor dispelling receives information feedback and interacts with the audience. At present, the impact of the emergency situation on the rumor refuting effect is less, and the type of event and topic popularity [10] will affect the dissemination effect of the rumor refuting information. On the one hand, public emergencies and hot topics will adjust the information release strategy of the subject of rumor refuting, and on the other hand, they will attract users' attention and promote the spread of online rumor refuting information. To sum up, in view of the existing research background, this paper combines persuasion theory, from persuasion subject, persuasion information, persuasion situation, and persuasion audience to construct the influencing factors of the effect of refuting rumors of emergencies, and discuss the influencing factors and direction of the effect of online refuting rumors of emergencies. The research framework is shown in Figure 3.1 below.

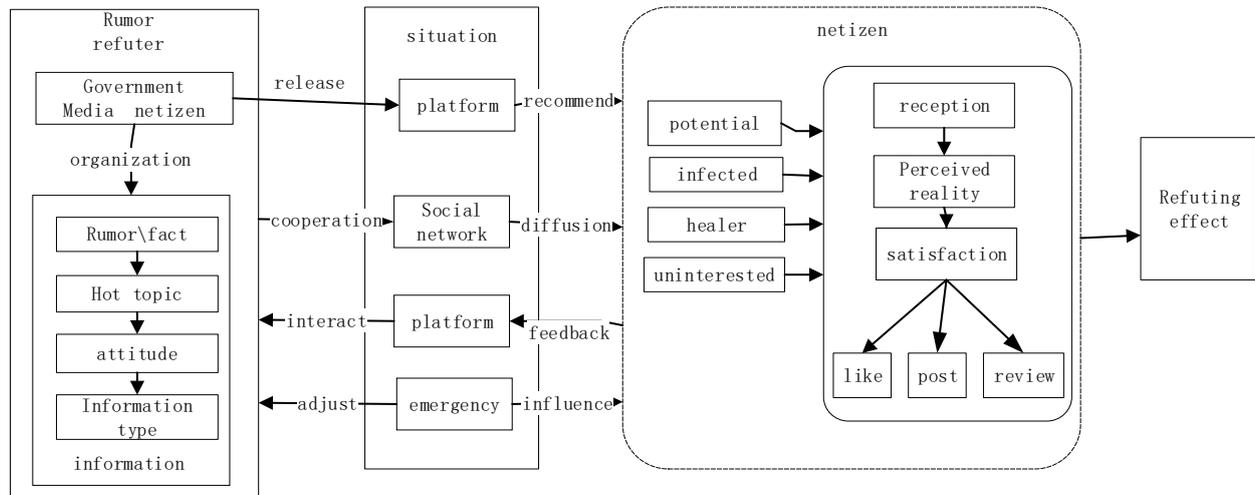


Figure 3.1 research framework

4. Conclusion

At present, the measurement and influencing factors of the effect of online rumor refuting are not perfect. On the one hand, due to the difficulty of data acquisition and cumbersome processing, most scholars only analyze the process of online rumor refutation from the single dimension of information, subject or network, and the research on the influencing factors of rumor refutation effect lacks a theoretical framework. On the other hand, the rumor-refuting platform lags behind in the release of information, ignores the audience's attitude towards the information, and lacks analysis of the effect of rumor-refuting and users' willingness to use it.

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