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In early 2020, the new coronavirus pneumonia (Referred to as COVID-19) spread rapidly throughout the country, which has a major impact on economic and social development. Timely and accurate disclosure of epidemic information will enhance the public's ability to discriminate against false information. The influence mechanism of epidemic information disclosure on the identification of true and false information was studied, and the influencing factors of epidemic information disclosure were analyzed and studied under the framework of the "Technology-Organization-Environment" (TOE) model and the two-factor theory of driving factors and impeding factors. Combined with the relevant data from the Open Data Network of Shandong and Jinan and the attention of hot news events on the Internet since the outbreak of the epidemic, it is proposed that information disclosure is conducive to reasonably guiding the public attitude and enhancing the ability of information screening.

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Keywords: epidemic information disclosure; influencing factors; information screening; epidemic prevention and control

1. Introduction

At the end of 2019, the first COVID-19 infection was diagnosed [1] (Chan, et al. 2020). Starting from January 2020, the number of confirmed cases began to increase exponentially, and the epidemic spread from Wuhan, China to the
whole country[2]. During the development of the epidemic, false and untrue information about the epidemic has a great negative impact on public life and epidemic prevention and control[3,4], which is easy to cause widespread public panic and is not conducive to epidemic control and control. Meanwhile, the formed public opinions will also have an impact on the rational decision-making of the government.

In the face of major health emergencies, the public needs more media channels to eliminate information asymmetry, and the disclosure of epidemic information by authoritative governments is the key to control the epidemic[5,6]. The spread of public opinions is generally divided into the formative period, the spreading period and the fading period. The disclosure of epidemic information by the government is conducive to alleviating public anxiety and making correct prevention and control behaviors[7-9]. In addition, the public can sort and utilize open data to assist the government in making prevention and control decisions, which reflects the evolution from traditional news reports to data disclosure[10].

Most of the current studies focus on information disclosure and data opening related to the epidemic as well as discussing the problems encountered in this process[11-16]. The lack of mechanism of action to analyze the disclosure of epidemic information and data from the organizational level leads to the lack of comprehensive and accurate influencing factors. Therefore, the purpose of the research is to study the role of the disclosure and utilization of epidemic data in improving the ability to distinguish the truth and falsity of epidemic information. By adopting the "T(Technology)-O(Organization)-E(Environment)" (TOE) model and the two-factor theory of driving-factors and hindering-factors as the analysis framework, the influencing factors related to the open use of epidemic information and data were studied from the micro perspective. Based on these influencing factors, combined with case analysis, the focus of hot news events on the Internet since the outbreak of the epidemic has been analyzed, and the key links of influencing factors have been identified, so as to help the public to distinguish scientific and accurate epidemic information from complex, multi-source and massive information.

2. Analysis of factors affecting the public use of epidemic information and data

2.1. Factors affecting the disclosure of epidemic information and data

2.1.1 Government perspective

From the perspective of the organization, the credibility of the government is to a certain extent affected by the feedback effect of information and data disclosure. Timely, transparent and accurate epidemic information and data can improve the credibility of the government, while the release of vague information by the government will cause more public opinion problems.

From the perspective of promotion, the timely release of epidemic information by the government is required by the policy and must be carried out. According to The Law of the People's Republic of China on Emergency Responses, Regulations of the people's Republic of China on Information Disclosure and Emergency Regulations on Public Health Emergencies, the government should promptly release warning information to the public to remind them to take protective measures. From the perspective of obstruction, major health emergencies tend to destroy the public's trust in the government[17]. However, at the early stage of the epidemic, due to the exploration and research of COVID-19 virus, the government does not have a comprehensive grasp of relevant epidemic information, and it is difficult to make a conclusion on some contents[18-21].

2.1.2 Social perspective

From an environmental perspective, when a major public health event occurs, public behavior is often directly related to the production of epidemic data. This will affect the government's release of information on the epidemic, specifically including the following aspects:

(1) Requirement. The urgent need of the public is the driving force behind the release of information on the epidemic. With the development of the epidemic situation, the public expects to get accurate information about the epidemic. In other words, society's need for information about the epidemic will "force" the government to release information and data.
(2) Flow. Population movement management is a key link in epidemic prevention and control. Accurate population movement data can not only be used for data analysis, but also contribute to the construction of the prevention and control system. It will also have a feedback effect on individual actions.

(3) Concealment. The individual's active behavior will have a direct effect on the results, and concealment will hinder the government's access to accurate information and increase the possibility of local epidemic spread.

(4) Timeliness. Failure to report epidemic information will affect the information disclosure. It makes it more difficult for the government to obtain timely information, and increases the risk to the lives of those infected and the likelihood of infection among those who come into contact with them.

2.2. Factors affecting the use of epidemic information and data

Based on the technical level, it focuses on how to make more effective use of public epidemic information and data to improve the ability to distinguish true and false information. The disclosure of epidemic data not only helps the public better understand the current situation of the epidemic, but also attracts the analysis and utilization of the public data. This paper discusses the factors influencing the utilization of epidemic data from the following aspects:

![Diagram](image-url)

**Fig. 1. Framework model of factors affecting the public use of epidemic information and data**

(1) Data timeliness. Timeliness of data is the premise of accelerating data utilization. Combined with the process of the national health system releasing epidemic data on the government website and the public response, the timely disclosure of epidemic data can help the public to make prevention in advance and enable research institutions to conduct research and analysis on the data in a timely manner.

(2) Data accuracy. The accuracy of the published data is the basis for conducting analytical research. Information intermediaries, such as third-party agencies, will process information under the influence of the interests of all parties, increasing the inaccuracy of information. With the improvement of digital technology, the public can get the accurate information they need directly from the government.

(3) Data feasibility. The feasibility of data provides a way for data analysis. The content and presentation of the exposed data should be able to extract key information efficiently and be easily downloaded, for example by providing data sets in various machine-readable formats such as EXCEL, CSV, and XML. Users can choose the appropriate data set according to their needs, which can shorten the distance between data and users.

(4) Data coverage. The data coverage determines the value of the analysis results. Data disclosure cannot only be made in a small scope. Local governments and institutions with relevant data collection capabilities should...
strengthen data collaborative sharing, accelerate data sharing and circulation on the premise of ensuring data accuracy, and promote the maximum utilization of data resources.

(5) User capability. Data mining and analysis ability of users is the key point to realize data value. The way in which data is used, that is, the ability of data users to use the data, will directly influence the results of research on data disclosure.

3. Research objects and data sources

3.1. Factors influencing the authenticity of public screening information

In Part 2, the study discusses the factors that influence the open use of epidemic information and data, under the influence of which epidemic information is processed and released. Due to the widespread popularity of new media, information can be spread quickly in a very short time, and network media will affect citizens' trust in the government in the evolution of public crisis events. Network media are numerous and complex, and the authenticity of their published content remains to be investigated. Therefore, how to make the public better distinguish the authenticity of information is an issue that needs to be further studied.

(1) In terms of the utility of information, the source of information is very important. Most third-party websites related to COVID-19 score low to medium in readability, availability, reliability, and quality, while information published by governments is often more authoritative and reliable. The public receives the right information and has the ability to detect false content, which can alleviate public anxiety.

(2) The authenticity, integrity and timeliness of information disclosure will affect the public's ability to identify information. The more detailed and specific the data released by the government, the more targeted it will be. The public can make reasonable responses based on the available information, and the more effective the prevention and control of the epidemic will be. At the same time, the official denial of false information reduces the uncertainty of public information.

(3) The public's mastery of public information is an important factor affecting the identification of information authenticity. Direct and clear public information and data can improve the ability to detect false information. In this case, false information will lose the living space, from the root to reduce the number of false information.

(4) The use of open data promotes awareness of the epidemic. Enterprises, universities and scientific research institutions will conduct mining and analysis, pre-research and pre-judgment on the open data, so as to help the government make better decisions based on the actual situation. After the research results are released to the public, it will also help increase the public's comprehensive assessment and awareness of the epidemic.

3.2. Data Sources

In order to further illustrate the important role of information release and data disclosure for the public to use data and determine the authenticity of information, this study selected 27 officially certified media accounts (including national accounts and provincial and municipal media, such as CCTV News, People's Daily, Global Daily, Sina Shandong, Qilu Evening News, etc.). By comparing the comments and statements (positive and negative) of the public at the social level before and after the release of government information, it analyses the public's attitude.

In combination with the timeline of the epidemic development, this study selected the Wuhan lockdown time (10 am, January 23, 2020) as the starting point, and adopted the search method of key terms on Weibo, with Baidu index, WeChat index and micro index as supplementary methods to track the popularity of terms. The role of government information release for the public to distinguish the authenticity of information is concluded through the release time of official government reports and the situations of forwarding, commenting and thumb up under the reports.

4. Research and Discover

By looking through the press release records of the above media and combining the amount of reading and influence of this topic, nearly 100 articles were selected and finally 16 topics and 45 key articles were sorted out. The results show that before and after the release of government information, the public's attitude towards online false information
has changed greatly. Before the government makes a positive response, most netizens will comment on and forward the messages with high popularity in thumb up. Even if the public is hesitant about these messages, they will still take corresponding actions according to the misinformation orientation under the influence of herd mentality. When the government responds to such news, there is a marked change in what is said in official reports compared with what was said before. Through combing, 16 topics are divided into three aspects: One is to clarify misleading information or refute false rumors. The second is the release of research findings of new outbreaks. The third is to issue new notices about the epidemic.

Table 1. A comparison table of the release times of epidemic news events.

| Key words                                      | Number of official release/rumor | Period of high heat (the year 2020) | Official information release time |
|------------------------------------------------|----------------------------------|-------------------------------------|-----------------------------------|
| Super-spreader                                 | 3                                | 01.21-01.26                        | 01.22                             |
| Novel Coronavirus affected by smoking and drinking | 1                                | 02.25-02.26                        | 02.25                             |
| COVID-19 and SRAS                               | 1                                | 01.21-01.27                        | 01.26                             |
| Novel coronavirus incubation period             | 1                                | 01.23-01.20                        | 01.26                             |
| Susceptible population                         | 3                                | 01.28-02.29                        | 01.28                             |
| Whether the epidemic constitutes an international public health emergency | 1                                | 01.30-02.02                        | 01.31                             |
| New Coronavirus Stay Time                      | 1                                | 01.29-01.30                        | 01.29                             |
| Shuanghuanglian out of stock incident          | 2                                | 01.30-02.02                        | 01.31                             |
| The spread of the new coronavirus              | 1                                | 01.28-01.30                        | 01.28                             |
| Asymptomatic carrier                           | 1                                | 02.02-02.13                        | 02.02                             |
| Mask output                                    | 1                                | 02.02-02.13                        | 02.09                             |
| Rencheng Prison in Shandong Province           | 1                                | 02.02-02.20                        | 02.09                             |
| Cases imported into Shandong from abroad       | 3                                | 02.02-02.20                        | 02.20                             |
| Proprietary Chinese medicine                   | 1                                | 02.02-02.20                        | 02.20                             |
| The source of the new coronavirus              | 1                                | 02.02-02.17                        | 02.03                             |
| Current situation                              | 1                                | 03.02-03.04                        | 03.02                             |

Events such as 2, 8, 14 belong to the first category. In order to arouse public discussion, the bad media, with incomplete information, produce false reports by editing existing videos or quoting experts unilaterally. The popularity of such news usually declines quickly after the official release of rumors.

Events such as 1, 3, 4, 5, 7, 9, 15 belong to the second category. Because of the public's urgent need for information on the epidemic, these incidents often attract more attention on the Internet. The public's panic over unknown events also intensifies the spread of false and untrue information. Interactive discussion also intensifies the tendency of
comments to deviate from the real situation and the content of comments to be negative. After the release of official information, the popularity of news will be pushed to a second peak, and then gradually decrease.

Events such as 6, 10, 11, 12, 13, 16 belong to the third category. Before the government clearly released relevant content of this type of information, most of the incidents have already aroused high public attention. The rate at which news interest declines after the official reports are released is usually related to the persistence of the event itself.

In the collection of topics, it was found that some of the information released by the official media did not completely conform to the facts, which was due to the great uncertainty and variability of COVID-19. As more research becomes available, the official clarification of previous information suggests that the government is keeping track of the outbreak. In addition, by inquiring the public open data websites of Shandong province and Jinan, it shows that there are multiple browsing records and downloading records of the epidemic data, indicating that the public is getting accurate information or data from the government through multiple channels.

5. Summary and Outlook

With the widespread popularization of the Internet era, information is widely spread. Timely and accurate release of information or public data by the government can help enhance public awareness of COVID-19 and alleviate public anxiety caused by uncertainty in the face of such large public emergencies. Through the comparison of epidemic information or data before and after publication, it was found that:

(1) When the scope of the epidemic gradually expands, it is often the "high outbreak period" of false information. At this time, official clarified news reports will also continue to increase. This method can improve the quality and quantity of information available to the public.

(2) After the data is released, the public's ability to distinguish the authenticity of information is improved. The more the public is aware of COVID-19, the more alert they will be to false information.

(3) If the government releases information that deviates from the facts, a timely correction of the information and an apology can repair public trust.

(4) The popularity of false news will decline after government officials refute rumors. During the epidemic, all kinds of bad media and marketing accounts exaggerated article titles to attract people's attention and affect the public's understanding of the real situation. The official denial of "false news" can reduce the popularity of these false reports.

(5) Multi-channel information and data release can increase data penetration and transparency. Diversified information release methods shorten the distance between the public and information, making it easier for the public to obtain correct information.

(6) Timely and accurate epidemic data are conducive to enhancing the public's capacity for epidemic prevention and control. Through the report, the public will have access to more reasonable and effective protective measures, which will contribute to the construction of the prevention and control system.

In addition, in the fight against the epidemic, all sectors of society are making active efforts, especially through big data, artificial intelligence and other technological means to improve the prevention and control capacity. Some high-tech enterprises and research institutes of big data use government data and industry data for mining, analysis, correlation and comparison, so as to carry out decision-making assistance, research, judgment and early warning.

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