Analysis of Double Influence of Big Data on Public Crisis Management

Haohan Wu
School of Government, Beijing Normal University, Beijing, 100000, China

*Corresponding author: haohan5@126.com

Abstract. With the rapid development of digital technology, the traditional governance methods have shown some defects in the decision-making of major public crisis events, and the application of big data can make up for the shortcomings of the traditional methods. This paper compares the advantages and disadvantages of big data in the application of public crisis management, analyzes the dual impact of big data on public crisis management, and analyzes the important role of big data in the future public crisis.

Keywords: Big data, public crisis management

1. Introduction

Human society is experiencing the fourth industrial revolution. The new round of industrial revolution promotes the rapid and deep digital transformation of human society, and big data governance has become the only way for the modernization of national governance. In recent years, the frequent major public safety incidents in the world have brought huge losses to human life and property. Countries around the world have accumulated and improved their ability to prevent and control risks while fully responding, and improved their emergency management system. In this process, government departments are increasingly aware that the application of big data plays a decisive role in the decision-making and behavior of the government and the people. At present, China is in a high-risk period of global risks and social transformation risks. There are both opportunities and risks in the transition from traditional society to modern society. Economic globalization speeds up the flow of global information and material, and envelops China in global risks. The Fourth Plenary Session of the 19th CPC Central Committee pointed out that it is necessary to speed up the improvement of the public safety system and mechanism, and establish a system of public safety hidden danger investigation and safety prevention and control. That is to say, "build an emergency management system with unified command, special skills, quick response and linkage from top to bottom, optimize the construction of national emergency management capacity system, and improve the ability of disaster prevention, mitigation and relief". The outline of the 13th five year plan of the people's Republic of China points out that "it is necessary to improve the emergency response mechanism for network and information emergencies, and build an emergency response system that matches the public security risks, covers the whole process of emergency management and involves the whole society".

With the development of the digital age, the integration of information systems, mobile intelligent...
devices and the Internet has produced massive data, which is called "big data". The concept of big data means a new era. The emergence of massive data, the rapid flow of population and the high-speed operation of society are the main characteristics of the big data era. Generally speaking, big data refers to a data set that cannot be perceived, acquired, managed, processed and served by traditional IT technology and software and hardware tools within a tolerable time. The arrival of the era of big data represented by cloud computing and Internet of Things has profoundly affected and changed various industries and social lifestyles, and promoted the transformation of politics, economy, culture and society. The government has reformed the traditional management ideas and methods, and pushed the government to deepen the reform comprehensively. As a scientific and technological innovation, the premise and foundation of big data governance is the opening and sharing of data. Under the governance mode of "big data+internet", big data is a "double-edged sword", which can not only promote public safety, but also endanger public safety.

Rosenthal, a Dutch crisis management expert, gave a definition that crisis is an event that seriously threatens the basic value and code of conduct of a social system, and must make a key decision under high time pressure and uncertainty. Traditional public crisis management is mainly based on sudden crisis events to deduce feasible measures applied to most events. It is a trend to promote public crisis decision-making by introducing modern technologies such as big data into the process of government crisis management. This is the transformation of government departments from "experience governance" to "data governance", "scientific governance" and "innovation governance". Based on the rapid development of big data applications and the diversity of its functions, the government and society should pay more attention to and use big data to further improve the crisis management system.

2. Literature Review

According to the 46th Statistical Report on Internet Development in China released by China Internet Network Information Center in September 2020, "by June 2020, the number of Internet users in China reached 940 million, an increase of 36.25 million compared with March 2020, and the Internet penetration rate reached 67.0%, an increase of 2.5 percentage points compared with March 2020. The number of mobile Internet users in China reached 932 million, an increase of 35.46 million compared with March 2020. The proportion of Internet users using mobile phones to access the Internet reached 99.2%, which was basically the same as that in March 2020. " With the expansion of the age range of netizens and the increase of the number of users, the speed of public crisis information dissemination is faster and the dissemination scope is wider. Chih Wei Tang, Zhou Wei, etc. (2020) think that under the environment of the continuous growth of Chinese netizens, if there is an urgent public crisis situation, the government will guide the public opinion and form a correct value orientation through the assistance of the media. Therefore, building an authoritative platform to dispel rumors can increase the dissemination scope and influence of real information led by the government. Yang Yuanyuan (2018) believes that in the new era, the party and the state attach importance to the Internet and big data, and the modern government should make proper use of big data technology in collecting information, publishing crisis forecasts, crisis handling and crisis aftermath. Ding Xiang and Zhang Haibo (2017) believe that the big data in cyberspace comes from the information generated by the public and the government, which is real and contains public anxiety and concern. Big data analysis is to identify, lock, collect and extract public anxiety and concern about security from public opinion data, and provide "precise coordinates" for crisis communication.

The fast-rising big data technology brings innovation and opportunities, but also brings uncertainty and risks. Duan Peng and Xiang Yuxuan (2019) believe that cloud computing and Internet of Things technology make the storage and processing of a large amount of data flood in daily life, and the bursting growth of information changes people's lives, which also means that the emergence and spread of crisis are more complex. British scholar Parker, J. (2014) pointed out that "a large number of personal and business communications and private personal data flow all the time on the computer network." In the process of big data flow, there may be problems such as security out of control and
personal privacy leakage, which all increase the difficulty of big data governance. Ren Wenqin and Li Zhengang (2020) believe that in the public crisis management of big data, data sharing should meet the requirements of timeliness. By setting the scope and limit of data sharing, the use value of data should be guaranteed, so as to prevent the loss and harm caused by the leakage of big data. Chen Guoquan and Huangfu Xin (2018) uncontrolled sharing may lead to data abuse, even data crime, data disaster and other problems. Therefore, some scholars propose that data sharing should be limited sharing. Li Chuanjun (2020) public crisis governance subject realized that the use of network information technology in social risk management can achieve twice the result with half the effort, and the innovation of big data technology gradually changed from passive to active. Zhang Xiaoqing (2020) concluded that the government should make full use of the advantages of big data in technology in public crisis, strengthen the collection of online public opinion, systematically analyze the development of events, and make full use of big data technology to screen and analyze information comprehensively. It can effectively ensure that the government can master effective solutions in a short time after the public crisis, and effectively guide the network public opinion. Therefore, the research on the application of big data in public crisis management is still a hot topic today.

3. The Impact of Big Data on Public Crisis Management

Since the reform and opening up, China has mainly focused on economic development and planning. For crisis management, the traditional public crisis management thinking is used to deal with emergencies and deal with the aftermath. China's public crisis management started late, lack of relevant theoretical basis, has not yet formed a complete crisis management system, cross sectoral coordination efficiency is low, crisis management fragmentation. Since the beginning of the 21st century, all kinds of public crisis events have taken place in the world. For example, the 9.11 terrorist attacks in the United States, SARS virus, Ebola virus, various domestic natural disasters caused by extreme weather, such as floods, snow disasters, mudslides, etc. The government departments gradually realize the importance of public crisis management. The traditional government's public crisis management thinking does not use data information, and has not yet realized the importance of data information to government public crisis management. In the new era, the government actively changes its thinking, applies and integrates big data thinking into public crisis management, establishes correct public crisis management thinking, and improves management efficiency with data information. Big data has 4V characteristics, such as scale, diversity, high speed and value. It can grasp more information about crisis in the public sector, and its scope and accuracy are greatly improved. In a short time, it can predict the nature and degree of sudden crisis events and make corresponding treatment decisions.

3.1 Advantages of Big Data Application in Public Crisis Management

3.1.1 Dynamic data is updated regularly to realize information sharing. At the beginning of 2020, the pneumonia epidemic in COVID-19 suddenly struck, which caught everyone by surprise, and everyone was in a tense and panic environment. At the beginning of the epidemic, we can only watch TV news and WeChat forwarding at home to relieve our inner anxiety and uneasiness. Today's headlines, Alipay, Weibo, WeChat and other social media in the middle of the epidemic have all opened up the epidemic data section to realize information sharing. You can track the novel coronavirus pneumonia landmarks by accurately clicking the specific circumstances of each province and city to ensure the safety of the residents around. The data of public crisis is not only generated by government departments, but also from various social software platforms on the Internet. Big data, cloud computing and other scientific and technological means can accurately and quickly classify, detect and process data information, so as to obtain effective information, and can put forward optimal solutions and improve the processing process in public crisis events.

3.1.2 Rumors and message control to enhance the credibility of the government. During the
pneumonia epidemic in COVID-19, words such as "Chinese liquor to prevent virus" and "Zhong Nanshan Banlangen" often caught people's eyes and ears on social platforms, and the broad masses of the people participated in it, which was later confirmed as a rumor. If government departments do not do a good job of information disclosure and efficient communication in dealing with crisis events, it will lead to panic among the public and the phenomenon of looting drugs. We should make full use of the efficiency of big data and the communication characteristics of new media, smash rumors in time and accurately, and convey correct ideas and self-defense measures. Government departments communicate positively with the masses through official media accounts, so as to avoid distortion of facts by marketing numbers, which is conducive to helping the masses understand the handling of public crises. This open and free atmosphere can enhance the credibility of government departments.

3.1.3 Cross-disciplinary cooperation to improve the crisis system. For a long time, the Chinese government's decision-making on public crisis mainly relies on the experience accumulated by government departments in the past and the sensitive perception of public officials, paying attention to the handling methods after the incident, while ignoring the importance of crisis prevention. In recent years, public crisis management has gradually presented interdisciplinary and cross-disciplinary cooperation, advocating decentralization and decentralization, and putting forward a new concept of flat governance. In the process of crisis governance, government departments should have a holistic response thinking, combine data and experience, coordinate different departments and organizations to provide necessary material, human and financial resources, and establish a complete public crisis management system.

3.2 Shortcomings of Big Data Application in Public Management Crisis

3.2.1 The information is miscellaneous and the wrong information misleads the masses. With the help of big data Internet of Things and other platforms, all kinds of information spread at the speed of light. During the COVID-19 outbreak, there were thousands of WeChat articles forwarded without roots, especially middle-aged and elderly people. For example, an ambulance appeared near a hospital in Harbin. Some people claimed that the hospital found COVID-19 pneumonia patients and closed it, which caused people to panic. After being verified by the police, the publisher released the video without knowing the facts and made rumors about the hospital, and was sentenced to criminal detention and fined. Similar incidents occurred frequently during the epidemic, which not only caused fear to the surrounding people, but also affected the work efficiency of government departments.

3.2.2 The local government's governance capacity is short. In traditional mechanism, local government plays the role of executor in public crisis. Big data is a new technology, and China is still in the process of groping for talents training. The market has a large demand for talents in this field. In China's local government departments, the age level of staff spans a lot, and the learning ability and mastering speed of emerging technologies cannot meet the current needs. This makes big data technology unable to be flexibly applied to the internal administrative level, and local training courses and mechanisms are relatively backward. At present, all departments of local government in China have information management systems, but they are still in a state where data is not shared between departments and between regions. The information island phenomenon makes it difficult to exchange data and information, and the repeated development and processing of data can not improve the efficiency and waste manpower and material resources.

4. Conclusions
To sum up, with the arrival of the era of big data and the rapid development of 5G technology, the Internet generates massive data and information every day. The advancement of science and technology can help the public sector choose the best method in the public crisis, and there will be new opportunities. At present, China is in a period of social transformation, and all kinds of
unexpected events will affect social security and stability. The existing public crisis mechanism is not yet mature, but it can accumulate experience in repeated public crises, combine it with science and technology, and improve its handling ability. Big data application plays an important role. It can make accurate predictions, narrow the distance between the government and the masses, reach consensus through effective communication, and maximize social benefits. Efficient service between departments, daily supervision and comprehensive management at the grass-roots level, improve the sensitivity and response ability of the theme with the government as the core to public crisis, and promote the government to improve the crisis management ability and governance system.

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