The Value of Big Data Technology in Epidemic Prevention and Control

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Abstract

The application of relevant big data technology provides an efficient and solid technical foundation for epidemic prevention and control. In the process of major epidemic control and prevention, big data technology provides high efficiency for epidemic prevention and control, reduces the loss of human resources, and makes the epidemic prevention and control more accurate. It is prepared to locate the population related to the epidemic situation, which not only improves the accuracy of diagnosis, but also provides medical personnel Members provide more information and prevention possibilities, and more ensure the safety of medical personnel. Big data can identify the degree of personal safety, such as the use of health codes, and also provide accuracy for screening under epidemic control, and provide efficiency for the subsequent economic recovery. As an increasingly mature technical means, big data emphasizes full sample, correlation and predictability. It has the characteristics of rich information resources, accurate prediction and calculation, and efficient operation rate, which will provide a strong guarantee for the epidemic prevention and control work.

Keywords

Epidemic prevention and control, big data technology, privacy ethics.

1. INTRODUCTION

General secretary Xi Jinping issued a call in his research and guidance: "resolutely curb the spread and spread of the epidemic and resolutely fight the people's war, the general war and the blocking war". This call for epidemic prevention and control requires that the overall situation should be taken into consideration, and the ability to work with high efficiency should be possessed, which coincides with the attributes of big data technology. Big data technology has overall requirements for data collection. The technical principle of data collection is a large number of global data, emphasizing the full sample, relevance and predictability of data. The enrichment of information will conform to the overall vision. Accurate prediction and manpower saving also provide high efficiency for the epidemic situation. The application of big data technology will become indispensable for the prevention and control of this epidemic technical support.

2. THE SPECIFIC VALUE OF BIG DATA

2.1. Improve the Medical Level and Ensure the Safety of Medical Staff

The decisive factor lies in the level of treatment for patients, and the key factor is the level of medical treatment. Based on the mature use of the Internet in the information age, medical data can be shared even to the medical teams in various regions, so that the rescue groups can get valuable medical data related to the epidemic situation in the first time. These shared data are

the basis for formulating treatment plans and developing vaccines. Big data technology can widely collect these data and further improve the accuracy of diagnosis direction and diagnosis prediction through systematic data analysis.

In the information age, big data technology has become the technical support to improve the level of medical informatization. First, big data technology is conducive to the development of online epidemic treatment, the integration of online resources and the construction of online platform. For the online diagnosis and treatment of epidemic situation, big data can share these data to realize joint prevention and control, mass treatment and mass control. The implementation of online epidemic treatment reduces the crowding of hospitals and a large number of population flow, avoids cross infection, and makes the people isolated at home better understand and respond to their own situation. This practice not only reduces the risk of infection, but also relieves the pressure of limited medical personnel and unlimited medical needs, which can use medical resources on the edge More efforts should be made to prevent the deterioration and spread of the epidemic. Secondly, for offline treatment, big data also has a unique role. Data monitoring of each offline patient's body data can timely follow-up the treatment. Modeling the data can also optimize the diagnosis process, allocate intelligence to the group medical data, and help the overall epidemic management work to prevent a temporary shortage of resources.

Big data technology is based on data collection, data analysis and prediction, which is the application of artificial intelligence in big data technology. Using artificial intelligence to diagnose diseases can not only greatly improve the accuracy of diagnosis, alleviate the plight of insufficient medical staff, but also prevent and reduce the risk of cross infection between doctors and patients to the greatest extent. How to deal with novel coronavirus transmission is not only a difficult point to control the new coronavirus pneumonia, but also the key to ensure the health of medical staff. [Yan Li, Wu Heqi. The value attribute and privacy risk of artificial intelligence in major epidemic control -- Also on the criminal law path of privacy protection [J]. Journal of Nanjing Normal University (SOCIAL SCIENCE EDITION), 2020 (02): 32-41.] for the application of big data in medical treatment, it supports various means and methods of epidemic prevention, and better ensures the safety of medical personnel.

2.2. Improving the Efficiency of Epidemic Prevention and Control

First of all, due to the need for timely and effective control of the spread of the epidemic, we must invest a lot of human and financial resources in the prevention and control of suspected cases. Compared with the highly effective infectious disease of the new epidemic, and the large number of people in the country, the traffic situation is extremely complex, these difficulties to the national medical staff labor test is quite arduous, limited medical staff want to check the source of infection and close contacts in a short period of time, carry out personal thorough inspection, not only the prevention and control efficiency is not enough, but also the working environment of medical staff is also affected It's full of the threat of an epidemic. In the stage of epidemic prevention and control, efficiency is the most needed stage. It is undoubtedly destructive for the prevention and control of key nodes of the epidemic situation to rely on human touch point investigation. Therefore, the efficiency value of big data technology is highlighted. Efficiency enables people to stand in the best opportunity and node of epidemic prevention and control in time, so that the epidemic prevention and control work has more time and manpower.

The value of big data for the prevention and control efficiency of the new epidemic is mainly reflected in the effective collection of personal information data, which can timely control the source of infection and cut off the transmission route. In the investigation of suspected cases, big data has the technical characteristics of comprehensive integration of information processing. The national railway, highway, aviation and other traffic information can be quickly

and effectively checked, and then the personal safety status can be quickly identified through the health code. Through the collection of information related to suspected cases, we can touch and check the contact population. Compared with personal recollection and explanation, this kind of information collection method is more reliable for screening the contact population. Due to the high infectivity of Xinguan, subjective judgment should be excluded in personnel investigation, and objective information should be used to be responsible for people's health.

2.3. Scientificity of Epidemic Situation Control Data

In the supervision of the epidemic situation, scientific and reasonable deployment and control of the areas with epidemic situation is the key point to reverse and maintain the situation. In isolation of relevant confirmed cases and detection of contact personnel, we also need to pay attention to the transmission mode of Xinguan epidemic, and at the same time of personnel management, we should also pay attention to the control of local areas and facilities. Big data technology can collect comprehensive data and use relevant technologies to predict and analyze. It is more comprehensive and scientific to establish control at the level of factual data. From a certain point of view, the deployment of big data technology is in line with China's national conditions. Due to the intensive and extensive flow of personnel in China, only by using big data technology for scientific control can we effectively curb it To control the spread of the epidemic situation, it is more efficient in industrial economic recovery, and enlivens the contradictory relationship between epidemic prevention and control, living security and economic recovery.

For the decision-making level, accurate prediction based on big data analysis helps relevant departments to make scientific decisions on regional deployment, and helps government departments to make control decisions, which reduces the subjective judgment influence, and makes epidemic control more scientific and reasonable from the data fact level. Big data technology brings accurate prediction of epidemic situation data, which can make detailed statistics on personnel activities in various regions and accurately judge the future epidemic situation, so that the government can allocate medical resources, human resources and other resources reasonably and effectively. For the application level of correlation technology, big data technology supports face recognition, mask recognition, infrared induction, thermal imaging, temperature measurement, UAV warning, etc. The related applications derived from big data technology are like more chessmen for regional deployment and control, and there are more means for the deployment of epidemic air defense to improve the effect of deployment and control. It not only realizes effective prevention and control in areas with intensive crowd flow activities, but also realizes a safer monitoring and early warning mode, so as to achieve the three correct relations between epidemic prevention and control, living security and economic recovery.

2.4. Optimizing and Upgrading the Epidemic Prevention System

The application of big data technology has been used in the outbreak of influenza A (H1N1) in 2009. Google made a big data model analysis on the numerous Internet search terms, and the correlation between the prediction results and the final official data was as high as 97%. Big data makes it possible to predict outbreaks. Here, the value of big data also lies in providing an important guarantee for optimizing and improving the epidemic control system and system. The new epidemic control and prevention system must be an advanced and complete system, which requires comprehensive and reasonable efficiency in management mode, infrastructure and current application of science and technology. Big data provides technical support for optimizing the overall upgrading of epidemic prevention system, and also provides decision-making suggestions for management mode and thinking concept in big data artificial intelligence.

The main purpose of systematic prevention of epidemic situation lies in the rapid response to the epidemic situation and institutional governance, which plays an important role in expanding the results of the epidemic, preventing the spread of disease, ensuring the order of life and maintaining social stability. Since the outbreak of SARS in 2003, China has put forward the goal of "establishing and improving the system of disease prevention and control" for the problem of systematic prevention and control of the epidemic. Various ministries and commissions have issued some normative documents such as "some provisions on the construction of disease prevention and control system", which puts forward the improvement and revision of China's epidemic prevention system. The big data technology provides the possibility of collecting and processing information of huge epidemic data, which makes the epidemic situation better controlled under the prediction of big data, and enables the government to establish a more targeted defense system and optimize the epidemic prevention system.

In the work of epidemic control, it is inevitable that there will be omissions or untimely response to the intelligence collected and reported manually. By using the technology collection form of big data, the data flow of the whole epidemic situation can be gathered together, and the epidemic prevention system can be established by objective and scientific technical analysis, which not only makes the epidemic prevention work more detailed, but also can actively arrange the strategy for the epidemic situation in advance by means of data prediction, so that the epidemic prevention system is more active and difficult to miss.

3. BIG DATA PRIVACY ETHICS CONSTRUCTION

In the background of Internet marketing, the starting point of constructing the ethical principle of privacy is to stand on the responsibility of each subject. In the construction of ethical standards for privacy protection in the era of big data, around the theme of "responsibility", the ethical standards of each subject are endowed with new connotation, which makes them pay more attention to the consequences of individual scientific and technological behavior and the responsibilities of all participants. Such ethical standards are more suitable for technology and more responsive to society.

3.1. Enterprises: Paying Equal Attention to the Interests of Enterprises and Social Responsibilities

It is true that the enterprise's revenue determines its own development and survival, but the operation mode of ignoring social responsibility and ignoring consumer rights and interests is undoubtedly killing the chicken and laying eggs, and it can not be sustainable development behavior. In fact, it is blind purpose to ignore the social responsibility of enterprises for the sake of short-term interests. Corporate social responsibility refers to the social obligation higher than its own revenue target. This kind of social obligation seems to be contradictory to revenue, but in fact, it is more conducive to the overall market environment and the long-term development of enterprises. In the Internet marketing, the main business subject enterprises should follow the socialist business ethics standards. On privacy ethics, enterprises should respect the privacy rights of individuals including dignity and freedom in business activities, and the decision makers of enterprise subjects should make rational decisions under the premise of fully contacting multiple social relations in the commercial field.

With the development and maturity of Internet technology application, mature Internet enterprises have the initiative to use information. From the perspective of initiative, it is obvious that industry self-discipline must also be an important measure to protect privacy. For example, in the United States, while promoting the development of Internet marketing and Internet technology application, the government first takes the legal dimension as the support of the minimum guarantee, and then puts forward the industry self-discipline methods to protect

citizens' privacy in four aspects, such as constructive industry guidance, network privacy certification program, technical protection, and industry self-discipline norms. These four methods provide a good reference model for the industry self-discipline of Chinese enterprises.

Although the development of the Internet in China seems to be quite successful, the application of technology is faster and faster, but the problem of privacy infringement is increasing. Similar to the "Internet search engine service self-regulation Convention" and "Internet terminal security service self-regulation Convention" and other conventions, the content of the protection and protection of users' personal data security and the right to know about the use of personal data, set up relevant provisions. The government has made a lot of self-discipline attempts on the construction of privacy ethics. It is possible to improve the construction of privacy ethics in the future. It is inevitable for Internet enterprises to create profits and revenues by using big data technology marketing. However, the real purpose is to consider how to generate revenue and give full play to the real benefits of Internet technology and benefit the masses. At the beginning of 2016, the Ministry of industry and information technology officially issued the big data industry development plan (2016-2020). The development of big data technology is not only in the industrial competitiveness, but also pointed out that the government should find and comprehensively improve the advantages of big data technology, and made specific deployment on the five-year development process of big data. The development of the plan not only affirms the benefit value of big data, but also takes into account the protection of personal privacy, so as to protect and supervise the use of personal information. Industry self-discipline is not only in itself, the government must establish a sound regulatory system for enterprises, and impose severe punishment on privacy violations. It is not only through supervision, but also to educate and guide the development of self-discipline awareness and property right protection awareness within the industry. Enterprises should set up a full-time data protection department to conduct evaluation, scientific analysis and speculate on the possible privacy leakage risks in the application of big data technology, which are the specific methods proposed by the government to help the industry self-discipline. Big data technology must comply with technical terms and ethical rules. With the process of ethical construction in the field of technological innovation in European and American countries, "responsible innovation" has been proposed and widely valued by the theoretical circle and the society. The theory of "responsible innovation" is an important part of sustainable development. For example, in the application of big data, we can improve the overall effect of big data technology application by analyzing all stakeholders. Considering the consequences of the application of big data technology in the natural and social environment, as well as the impact of the scope faced, and the results and choices involving social needs and moral values, the relationship between the two pairs of categories should be correctly evaluated to provide direction for the functionality of the design and development of new research, products and services.

In short, when constructing the ethical principle of privacy protection in Internet marketing, we should adhere to the concept of corporate interests and social responsibility, and always abide by the principle of sustainable development in the development of Internet marketing. At the same time of technological innovation, we should pay attention to the comprehensive consideration and evaluation of the innovation and design process of big data technology, and fully investigate the technological innovation Only when big data technology adheres to this ethical principle and respects personal privacy can it develop healthily.

3.2. Government Subject: Principle of Freedom and Moderation of Supervision

The construction of the ethical principle theory of government subject is to consider the dialectical relationship between supervision and supervision. Before looking for the relationship between the two, we should first understand the meaning of relevant categories.

We should first discuss freedom. Freedom is the most basic demand of human being, and it is the comprehensive embodiment of the internal value of human nature and the external value of achieving the fundamental conditions of self realization and social progress. In the Internet space, due to the characteristics of the Internet and the tendency of technological adjustment, people's freedom in the Internet space is difficult to be truly controlled by themselves. Individuals have to sacrifice some degree of freedom in exchange for the needs of industry or environmental security. The process of data in today's society is gradually accelerating. Individuals can't be separated from the participation of the Internet in the society. We have to face the problem of what the individual should be free in the Internet space. Freedom needs to find a balance between safety and efficiency. Freedom without security is not real freedom. Freedom under individual rights and government regulation often coexist and complement each other. They are mutual concepts. Like the positive and negative sides of a piece of paper, complete freedom does not need supervision, but freedom without supervision and security has no value. It is true that in social life, everyone has the right to decide his own current activities and choose his own behavior. His own free will is unconditionally supported. However, when it comes to the three parties of big data technology, enterprises separated from government regulation will imperceptibly influence what you think of yourself through data push, data prediction and other ways for the benefit of enterprises By choice, it is necessary for the government to participate in the supervision. The government must reasonably control the enterprise's behavior that affects the individual's inclination. However, the government can't participate too much, and the excessive supervision will lead the individual's choice tendency to the mainstream value orientation infinitely. Although the individual's self can be guided to the right side, it will lose its freedom, and the society will lose the ability of innovation and creativity It's dynamic enough. This requires that individuals in the Internet can not be imprisoned because of strict monitoring or data prediction, which shows that people can talk about autonomy better under reasonable rules and supervision. Therefore, for the government subject, in order to protect the privacy of individuals, we need to construct the ethical principle of freedom and moderate supervision. Under the premise of ensuring social security and personal safety, the public moderate freedom is the tendency point of the ethical principle of privacy protection in the Internet era. We should evaluate the dialectical relationship between supervision and freedom, let the government supervise enterprises and individuals, and pay attention to the protection of personal privacy, and pay attention to the public's appeal for personal freedom.

3.3. Individual Subject: Advocating the Principle of Self Responsibility

The construction of ethical principles based on individual is the starting point of self-protection of self privacy, such as actively taking measures, using new knowledge and new methods, or actively catering to policies. Because the development of law and technology is not comprehensive or lags behind, individuals from the perspective of ethics must play their own subjective initiative, and implementation is the most direct self privacy protection. Every individual in the Internet space can't stay out of it. Although enterprises or governments protect their privacy by following the system, formulating conventions and upgrading relevant technologies, individuals must actively cater to these means, and must improve their awareness of self-protection and respect the privacy of others. This is the most direct way to be responsible for their own privacy, Only if everyone sets up and adjusts the right privacy concept, can we make better actions to protect our privacy in the Internet space, and better cooperate with the government's policies or use the privacy technology of enterprises. The correct concept of privacy should include two parts. The first is to define the boundary of self privacy, avoid behaviors that may harm the scope of self privacy, consciously screen Internet applications, and consciously prevent social behavior or purchase behavior on the Internet. For example, you

should pay attention to the real information of yourself when shopping, and the dynamic of social software should not involve yourself Personal sensitive information, the second is the sense of responsibility of self privacy protection, self responsibility means the importance of personal privacy security, the importance of privacy protection is affirmed. Once we realize that our privacy has been violated, we should protect our privacy right by legal means or other means as soon as possible. Although the power of the individual is in a weak position compared with that of the organization, the protection of the individual is timely and initiative. People should pay more attention to their own privacy protection, clear scope, learn protection methods. With the development of Internet technology, the laws and regulations of privacy protection in China are not perfect. At this time, it is particularly important to improve and strengthen the self role awareness and self-protection awareness of Internet users. It is not only a virtue to be responsible for one's own privacy, but also to guard against the internal crisis of one's own privacy.

4. CONCLUSION

We should stick to the correct goal orientation and follow the principle of human relations. In order to achieve the in-depth integration of big data, disease control and prevention, medical diagnosis and treatment under due process, we will surely achieve a comprehensive victory in the overall war of epidemic prevention and control.

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