**Research on the application of big data technology in government management**

**Chen Mingtsung**¹*, **He Jiaqi**²

¹ Department of Public Administration, Nanfang College of Sun Yat-sen University, Guangzhou, Guangdong, 510000, China

² Department of Public Administration, Nanfang College of Sun Yat-sen University, Guangzhou, Guangdong, 510000, China

*Corresponding author’s e-mail: 306470714@qq.com

**Abstract.** With the advent of the new technology times, big data technology has been widely used as an important strategy of comprehensive social governance. The development of big data not only represents huge amount of data, advanced information technology and huge business opportunities, but also is an effective method to solve problems, transform the world and explore new ideas and scientific applications in the future. However, big data in economic development does not mean that it can replace all the rational thinking of social problems. The logic of scientific development cannot be annihilated in the mass data. In this era of rapid development of intelligent hardware, an important problem for application developers is how to find the delicate balance between power, coverage, transmission rate and cost. Enterprise organizations can use relevant data and analysis to help them reduce costs, improve efficiency, develop new products and make more informed business decisions.

1. **Preface**

The launch of "big data research and development plan" by the US government in 2012 is regarded as the most indicative event in entering the era of big data. EU countries have successively opened up government information. In 2012, the UN released the big data report, setting off a global research and application boom. As early as before IBM officially coined the term "big data" in 2010, similar big data and cloud service cases have emerged in succession. With the advent of the society we live in, not only the technology is developed, the information is circulated, the communication between people is more and more close, and the life is more and more convenient. Big data is the product of this high-tech era, which has attracted more and more attention. In recent years, the development of big data has not only entered into commercial trade, but also affected many industries. It is also regarded as a key technology to enhance industrial competition and government efficiency. International research and application of big data have been actively invested. However, the purpose of enterprise management is to pursue profit, which is different from the government's low-cost management efficiency. As Harvard Business Review said, big data applications span financial management, retail channels, disease prevention, health care, energy conservation, transportation, human education and other technologies, and can even extend to social aspects such as disaster relief and humanitarian assistance. The following is a typical case of integrating big data in various fields of social management application, so as to explore the development of big data.
2. Application of big data in social management

2.1. Disease prevention
When it comes to the practice of big data in disease prevention, influenced by big data - the traditional way of tracking the spread of the epidemic in the United States is to collect doctors' visiting data to estimate. Because the general public feel sick, they usually go to see a doctor a few days later, and the reporting process also takes time, so the speed of grasping the epidemic is still slow about 1 to 2 weeks; Google has published another tracking method to pick out the most important one in the United States. The 50 million commonly used search words were compared with the epidemic situation of influenza in 2003-2008 of the CDC. It was found that 45 search words (such as cough relieving and fever reducing) could be used in combination with a numerical model to successfully predict the spread of influenza in winter 2009, even in specific regions and states. If we make good use of this software, we can save the trouble of data collection and body detection. Only by using a large number of daily search records, we can accurately and real-time grasp the spread and intervention of the epidemic, such as early warning, isolation and dispatching of medical resources.

| Table 1. Influenza epidemic in the United States - estimated number of cases by Google |
|---------------------------------------------------------------|

2.2. Health care
Big data has made great progress in clinical diagnosis, remote monitoring and drug research and development. Taking the other side as an example, at present, more than ten cities have launched digital medical treatment. Medical records, images, telemedicine, etc. all produce a large number of data, and form electronic medical records and health management files. Based on these massive data, the hospital can accurately analyze the disease, treatment cost and efficacy data, avoid excessive and high side-effect treatment, and can also be used for remote monitoring and chronic disease management. On June 21, 2014, Professor Nakagawa Kai, Affiliated Hospital of Toyama University, said at the 17th spring academic conference of all Japan medical information society that the Affiliated Hospital of Toyama University applied 17 million cases, 143 million prescriptions and 3 million diseases accumulated in the past nine years to assist doctors in analyzing the best prescriptions.

2.3. Transportation
Big data has been widely used to solve the complex traffic environment, because vehicle lbs positioning can accurately analyze the volume and speed of vehicle traffic at a specific time, provide guidance, scheduling and control prediction for the competent department, and remind the users to avoid the peak and blocked road sections and improve the transportation environment. TomTom, the leading brand of satellite navigation in the United States, uses 80 million mobile phones monitored, one million TomTom live satellite navigation machines to move at the road speed, with RDS-TMC road information system to build a real-time database. Through GPRS real-time information, such as the average speed of a road section, the switching frequency of red and green lights, the average speed of construction and accidents in different periods of the road section, every two minutes the frequency of one time can push and
broadcast the satellite navigation machine in time. As long as the customer uses the TomTom navigation app on apple, iPhone or Android phone, it can provide the driver with an optimized path and save time. Even if they are trapped in the traffic array, they can accurately predict the delay time. According to the statistics system, the average driving time can be saved by 15%.

Table 2. Real time traffic data in Manhattan, New York. Real time traffic data system helps drivers avoid congestion or construction sections. (source: from TomTom live traffic)

2.4. Supervise governance
South Florida sun sentinel, in order to investigate the overspeed problem of police cars, through the analysis of big data system, found that 3900 police cars had more than 5100 speeding records in 13 months, and further screening analysis found that most of the speeding time actually occurred in the commuting time, so it was not due to official business. After the news was published, it caused public concern and nearly 800 police officers from 12 departments involved in the case were corrected or punished. This case shows that the application of big data can be very simple, not as complex as imagined. Digital data plus simple formula can discover potential problems, only need correct data and accurate calculation.

2.5. Humanitarian assistance
About 1300 people were killed and 350000 left their homes in a nationwide uprising over the 2007 election dispute of the leaders of the East African Republic of Kenya. At that time, a group of programmers and network groups jointly launched the "Ushahidi" plan. 1. Users can upload images in real time through SMS (short message service) or website, and then use Google map to demarcate the location, timely disclose the actual situation of the region and seek international assistance. After 2008, "Ushahidi" plan is often used for similar international humanitarian assistance, providing multi-national platforms for major event notification and crowd mapping, such as the tracking markers of the 2010 Republic of Haiti earthquake and 2011 northeast Japan earthquake, setting a record of 600000 family name information markers, which can be regarded as a successful case of short-term humanitarian assistance information collection and integration.

3. Big data development in the future of government governance
Big data is a set of systematic, standardized and scientific complex concepts, including business and management majors, which need to have the byte concept of computer storage, as well as network application, system management and another professional knowledge. In order to turn complex concepts into systematic and simple explanations, the following formula is used to explain the essence of big data meaning:

Big data = transaction + interactions + observations

With the White House's "2014 big data white paper" published on May 1, 2014, which was included in the national strategic policy, advanced countries have caught up with each other and put
forward national development policies. In December 2014, apple and IBM officially announced the launch of the enterprise version of mobile first app, which provides IBM's big data enterprise users with access to IBM's cloud big data analysis tools and business applications using iPhone and iPad, so that the future of big data industry will bloom. Looking forward to the future development of big data, it will present the following eight trends:

1. Data resource will become the most valuable asset.
2. The implementation of big data management in more traditional industries.
3. With the integration of big data and traditional business intelligence, customized solutions will emerge in the industry.
4. Data will be more and more open, and data sharing alliance will appear.
5. Big data security is getting more and more attention, and big data security market will become more and more important.
6. Big data promotes the development of intelligent city and is the engine of intelligent city.
7. Big data will give birth to a batch of new jobs and corresponding specialties.
8. Big data improves our life in many aspects.

4. Conclusion
Based on the traditional random sampling research mode, which has been gradually replaced by "big data convergence", the thinking decision-making mode of the past research methods faces the severe challenge of objective and accurate analysis of big data. When we are being penetrated rapidly by this invisible force, we should adjust our response in a timely manner in the face of the advent of the era of big data, based on the research position of crime prevention and control, and with brand-new thinking. The global revolution of big data has quietly taken shape, which is a huge change that is related to the country, society, people's livelihood and science and technology. With the gradual maturity of the development of network information, big data application technology is gradually subverting traditional thinking, changing our lives, influencing all kinds of specialties, all over the world. Accelerating the application of big data is absolutely an important strategy for the development of science and technology in China at this stage. It is hoped that the government can accurately calculate the needs of the public and look forward to governance through the application of big data in social management, and improve administrative efficiency. However, the significance of big data development does not mean that it can replace all rational thinking on social issues, and the logic of scientific development cannot be annihilated in massive data. It's true that we must be careful when developing big data technology.

References
[1] TOMTOM.ANNUALREPORT.(2014), Create designed corporate reports in-house, on the cloud, and in record time, http://annualreport2014.tomtom.com/management-board-report/business-and-financial-review-by-business-unit.
[2] What are the main values of big data? (2017), http://www.vwell.cn/news/82.html,2019
[3] 5 data breaches: From embarrassing to deadly.(2010), http://money.cnn.com/galleries/2010/technology/1012/gallery.5_data_breaches/
[4] Baidu, (2016), big data, https://baike.baidu.com/item/%E5%A4%A7%E6%8D%AE/1356941?fr=aladdin
[5] Wang,W.Q.(2014) application of big data processing technology in petrochemical enterprises, computer optical disk software and application, No. 2, Pp. 82.
[6] Li,J.J, (2015) on big data challenges and responses in Criminal Investigation, national lawyer, p. 64-66.
[7] Yan,T.(2019) on the opportunities and challenges brought by the big data era to the investigation of job-related crimes, Legal Expo, No. 22, Pp. 154-155.
[8] Zhang, G.M, Huang, W.Z., (2019) big data in Criminal Investigation, Journal of Vocational School, No. 1, Pp. 84-89.

[9] Guo, Z. (2019) epistemology of investigating and handling job-related crimes in the era of big data, political and legal theory series, NO.3, Pp. 42-54.