



Government Management Innovation in the Age of Big Data

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Abstract: “Big data” is a word to be increasingly mentioned, which is used to describe the coming of information explosion. It also defines the related technology development and innovation. Big data triggers a great revolution. This seems to herald the inescapable process of quantization for all professions including academia, business or government. The trend of big data obviously outdated the conventional means of government administration, hence making its innovation the theme of this age. The innovation faces both opportunities and challenges. Opportunities are that it promotes information transparency and policy making based on population subdivision. For challenges, it may increase the risk of “data dictatorship”, privacy, once being abused, may also lead to preemptive punishment; it is also possible to deepen “the digital divide”. Based on pioneering research, this paper puts forward a new mode of government administrative innovation.

Key words: Big data; Government management; Data dictatorship; Information

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INTRODUCTION

With Internet developing; a variety of terminal equipment produced prodigious amounts of data; which means the age of big data coming. International Data Corporation (IDC) research reports: in 2011; the number of global data created and copied is 1.8ZB. IDC predicts; in 2020; the number of data around the world will be 35ZB^[1]; however the edition “Encyclopedia Britannica” printed in 2010 is less than 4G. Wall Street journal treats big data; intelligent manufacturing and wireless network revolution as three grand technological transformations; which may be enough to match the change of last century^[2].

There is no standard definition of big data now. As is usually considered; it is non-structured data in large and diverse forms. Big data is usually associated with Hadoop; NoSQL; data analysis and data mining; data warehouse; business intelligence and cloud computing together. Gaertner’s research report suggests large data is information asset of large capacity; high speed and diversification. They need a new approach to improve the decision-making ability; insight and process optimization^[3]. The definition of IBM and IDC is more representative; both of which think big data should meet the “4V”; three of which are Volume; Variety and Velocity. IBM identified the Fourth “V” is Veracity^[4]; but IDC identified the Fourth “V” is Value. Net-App thinks big data include three elements “ABC”; namely Analytic; Bandwidth and Content^[5]. Of course; regardless of various definitions; big data inevitably subverts the traditional way of data management; which brings revolutionary change in the data source; processing method and thinking. Computer Turing Award winner Jim Gray puts forward the fourth model of science research whose main characters are collaboration; networking and data intensive^[8]. Maier Schoen Berg and Kukye think that big data relates to three major changes in thinking and interaction each other: analyze all the data associated with something rather than a small number of data samples; be willing to accept complicated data instead of the pursuit of accuracy; regardless of causality but search for the relationship between things ^[7]; big data reshapes our lives; work and the ways of thinking; meaning the “information society” finally be worthy of its name^[8]. Big data indicates that the mankind society is stepping from the information age into the era of intelligence.

Government management innovation in the age of big data has emerged. The data analyzing team behind President Obama plays a crucial role in his re-election campaign; highlighting the new rules of electoral politics in the age of big data. In 2012 March; the federal government announced the launch of American “big data development project”; which is located as an important national strategic. The United Nations launched “Global Pulse” project using big data to promote global economic development. They make “sentiment analysis” for data of social networking sites and text information through natural language decryption software; which helps an area forecast unemployment; spending cuts and disease outbreaks. ^[9] In 2010 July; the British Cameron government launched a new agenda in the foundation of the open data movement; which advocated more rights from the central to local; from the local to the community; from politicians to the public so as to establish a bigger; stronger; better society^[10]. Big data will ensure public information open and transparent. At the same time; open data inevitably affects the government management innovation.

THREE PERSPECTIVES ON THE STUDY OF GOVERNMENT NETWORK MANAGEMENT

1. The anarchism in government network management: the utopia of freedom

Restricted by the times; the early Internet researchers pay more attention to the advantages of network. The Internet makes the cultural; politics out of the “center”. The network society is always associated with open; freedom; equality and sharing together; in which the traditional discourse hegemony and centralization are subverted. In the study of bureaucratic rule; Berson and Yazawa Shujiro think that the development of computer technology deepens people for freedom and democracy; making the mass energy burst out^[11]. As a representative of the scholars on the network management; Barlow thinks cyberspace makes a society that is of difference from the reality—freedom but without confusion; management but without government; consensus but without privilege ^[12]. Negroponte points out: neither legal nor bomb can make politicians control the network. The message can be sent out by one way or the other^[13]. Yuan Feng also thinks: the Internet gives people the rights of equal communication and expressions; which makes the social culture of a diversified development. Providing free interactive political hegemony; economic benefits for the public; Internet becomes a challenge to the social mainstream culture authority^[14].

2. Levitan in social network management

This perspective thinks information filtering; network database; electronic monitoring; site blocked technology can strengthen the control of power so as to create a Levitan of social network management. Both government and large enterprise groups intend to control the internet. As Hiller points out; the Internet is not a new kingdom detached from the real world. On the contrary; the Internet is close to the real world. The Internet in fact is the most wonderful political tool in the age of globalization ^[15]. Post believes that; any communication between people and people; people and institutions will leave traces in the database in the age of big data. Private activity becomes a kind of public activities. The database can revise us without eyes but through the cyber space more accurately^[16]. In Fantine’s opinion; in the authoritarian regimes; the Internet is a contradictory existence; which not only threatens but also strengthens government’s control of information and society^[17].

3. The interaction between the government behavior in the network society and real social management

The research views the Internet as a neutral tool. Internet is embedded in the concrete structure of the society and the political culture; in which government behavior pattern is strengthened. As Robert Keohane and Nye think; the classical political issues who rules; how to rule and whose benefits not only relates with the traditional physical space but also relates with network space. Information does not flow in a vacuum; but in political space^[18]. Sheldon discussed the meaning of internet political ecological system and the components. He thinks that the internet political ecosystem is an ecological system treating information as the core. Members in the system generate information; through which they communicate each other; ultimately complex self-organizing and self-adjustment function made. The electronic government plays guiding role^[19]. Xiao Bin thinks information technology not only breeds a great

opportunity to digital democracy but also face realistic risks sliding into “digital Leviathan”. Only by the way of citizens; civil society and constitutional democracy system can inhibit the single state monitoring system expansion to overcome “digital Leviathan”^[20]. The rise of the network society management is not sudden. But it has accumulated profound theoretical accumulation and practice such as multicenter governance theory; deliberative democratic theory and public governance theory.

The three perspectives above reflect different sides between network technology and public power; which provide the basis for our next research.

THE MODE AND CHALLENGE OF REALIZING GOVERNMENT MANAGEMENT INNOVATION IN THE AGE OF BIG DATA

1. The mode of realizing government management innovation in the age of big data

1.1. The transparency of information

Revolution of information creates a new political trust; in which the transparency of information is becoming a kind of right assets^[21]. The data will be a good opportunity for the government to achieve the transparency of information. The data of government departments are easy to get; which can improve their work efficiency. In 2009 March; Obama appointed the first Chief Information Officer in history. Then the federal government open data portal Data. gov appears on line. A “planning the digital future” report in 2010 said “every agency and department of the federal government need to make a data strategy to establish an open and transparent government; in which citizens can participate and cooperation can be possible^[22].”

1.2. Forecast public demands

Revolution of information creates a new political trust; in which the transparency of information is becoming a kind of right assets^[21]. The data will be a good opportunity for the government to achieve the transparency of information. The data of government departments are easy to get; which can improve their work efficiency. In 2009 March; Obama appointed the first Chief Information Officer in history. Then the federal government open data portal Data. gov appears on line. A “planning the digital future” report in 2010 said “every agency and department of the federal government need to make a data strategy to establish an open and transparent government; in which citizens can participate and cooperation can be possible^[22].”

1.3. The policy based on population subdivision

The public department should provide equal services for all citizens. But if there is not enough data to understand public demands; the equalization of the service supply would not be possible. The McKinsey study found that; service can be supplied according to the data of individual or a certain group; which can improve the efficiency; effectiveness and citizen satisfaction. Fortunately big data provides an opportunity to realize it^[25]. For example; through analysis of massive historical; the German Labor Bureau adjusts government’s welfare for the unemployed; reducing government spending and improving user’s satisfaction^[26]

2. The challenge of realizing government management innovation in the age of big data

2.1. Data dictatorship

Using big data; Amazon checks our shopping habits; Google checks our webpage browsing habits; Twitter hacks our information and Facebook seems to know all; including our social relationship. Government uses big data not less than private enterprises. Washington Post disclosures; in 2010; the number of e-mails; phones and other communication records intercepted by USA NSA every day is up to 1.7 billion^[27]. Big data threatens our privacy and freedom; which are the foundation of modern society. It also aggravated an old threat that we rely too much on data; but the data is not reliable as what we imagine. Digital memory created by big data not only supports the control of hierarchical organization and society but also seeks for their own support so as to consolidate and deepen unequal information power distribution^[28]. In a word; big data may produce “data dictatorship”.

2.2. Privacy was abused to preemptive punishment

Value of Big data is no longer simple basic use; but is more used twice. A lot of data is not intended for other uses when in the collection; but eventually many innovative uses occur. Big data makes the community lose the ability to forget; and perfect memory instead. Our past as a tattoo inscribed on our digital skin^[29]. In fact; American Department of homeland security is developing a set of future behavior detection technology (FAST) security technology. They can find potential terrorists by monitoring personal characteristic and individual behavior^[30]. In particular; in the transition from small data to big data; data quality may be poor; not objective; misleading or not quantified. We don't have idea inaccurate forecast will damage social system order.

2.3. Digital divide

Digital memory deepens the divide between the information rich and the information poor; which further enhances the power tilt. Digital memory has three characteristics: accessibility; persistence; comprehensive. Business or government might use the information to achieve information superiority. We can't see reciprocity information; but the information power from powerless to the power^[31]. The reason of digital divide is the differences among information collection; search and analysis; which will form an accumulative difference.

2.4. Institution

In the age of big data; the institution with purpose of protecting privacy policy will fail. It can be seen as a proof of Austrian's word “culture lag”; scientific discovery or invention first; the backward adaptation culture can be often the social organization and ideology^[32]. Risk society theorists Rush thinks: the institution using technology to avoid risks and dangers may involve new risk and lead to a larger scale degree of disorder even complete collapse^[33]. So social risks big data brings are huge.

THE WAYS OF GOVERNMENT MANAGEMENT INNOVATION IN THE AGE OF BIG DATA

1. Management based on data: provide the wise public service

In the age of big data; the government will focus on data management; as shown in Figure 1.

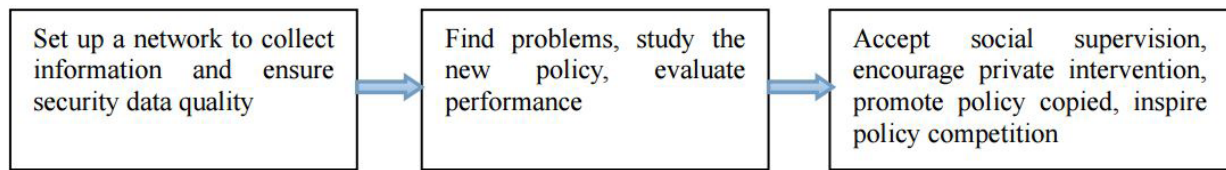


Figure 1 Government Management Based on Data

1.1. Change from information collector to information analysts

In the age of big data; the collection; management and analysis of data has become the most important. Though data of one year; one area does not see too many tricks; with the cross-regional and year; more and more groups' behavior characteristics will present order; correlation and stability and more rules will appear^[34]. Through the analysis of massive data; government can timely understand the public demands to improve the policy response so as to supply good public services.

1.2. Change from information claimants to information offer

In the age of big data; data can be automatically integrated on the internet. Using data technology tools to analyze the public browsing preference; service application; online reviews; the government provides personalized service for the public. The main target of data open website "data.gov" set up by Obama government is to open information to inspire more innovations^[35]. Similarly; in 2010; British Prime Minister Cameron proposed a concept "Right to Data"; which thinks right to data is a basic right in the age of big data. He also promised every citizen had the right. The labor department and business department in Britain announced a new project to implement the data right; My Data; which ensured personal right to data.

1.3. The government decision is from the prediction to real and accurate record

First; social management information is published in time. For example; the data pulsation of United Nations emphasizes the real-time data. It makes the prediction by analyzing the real-time data to force the government decision changes from the prediction to real and accurate record. Secondly; more accurate information for decision making is needed. Big data is not random data analysis; but the full data; namely "sample = populations"^[36]. In state of New Jersey; the introduction of INRIX data traffic management system; which is of accuracy and of broad coverage can reduce travel time and cost ^[37].

2. Construction of the responsible and freed information management system

In the age of big data; it needs to take more responsibility for privacy data management institutions to protect privacy information. Maier Schoen Berg puts forward three strategies; including privacy preserving transformation from individual permission to data users. When using prediction analysis; individual motivation is needed to consider. Fighting against the data monopoly will be the basic of data management effectively^[38]. At the same time; he also puts forward the concept of "Internet forgotten movement" in order to protect the right of privacy and data security^[39]. These measures all emphasis on both responsibility and freedom; which are also social network management development direction in the age of big data.

3. Rebalance public power: network citizen society and citizen rights

Since the birth of the network society; there always existed balance-imbalance-balance interaction among public power; network citizen society and citizen rights. Balance between civil society and state is the ideal harmonious society. Civil society is not only an important bridge between the government and the citizen; but also a powerful source and an important factor of influencing the government decision-making and government reform^[40]. Information technology is a kind of social right tools; which reduces the influence of population pressure on the individual. Through interaction; users will choose important problems they think rather than the media think important to become a part of the public agenda ^[41]. The collective movements on the internet contributes to overcoming control by the public power. For example; open data movement has penetrated into political; cultural; social and other aspects; creating the motions and the slogans of open political; open government; open media; open city and so on. As a result; 50 governments participate in the “open government union”; whose slogan is “Using format can be reused to publish high quality information; including the original data timely to the whole society”^[42]; which reflects rebalance public power; network citizen society and citizen rights.

CONCLUSION

Based on the theory of government behavior and big data theory; this paper analyzes the mode and challenge of realizing government management innovation in the age of big data. In the age of big data; the following measures benefit to realize the government administrative innovation: applying the “management based on data” method; constructing the information management system on a responsible and liberal basis; rebalancing the public power; internet civil society and citizen rights. As an exploratory research; it helps us to understand the significance of government management innovation in the age of big data. But what needs to point out are: First; big data technology itself is not mature. The relevant technology and application in the field of social management is relatively less. So the conclusion of the paper needs further inspection and correction. Second; for China; it will be a gradual process to realize government management innovation in the age of big data. It requires government; industry and academia work together; which is our next research direction.

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