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The application of big data in the financing model of small and medium-sized enterprises

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Abstract

Big data technology is another information revolution after the cloud computing. Since the big data era is coming, a series of effective information has gotten a high efficiency application by the enterprise. Small and medium-sized enterprises are important force to promote China's economic development, science and technology innovation, safeguard social stability harmonious and increase employment opportunities, their status in the comprehensive development of our country has been widely recognized. However, although in an important position in China's economic development, small and medium-sized enterprises face huge obstacles in financing. Solve the problem of financing difficulties of small and medium-sized enterprises is not only the need of healthy development of the enterprise itself, but can also promote the development of economy more sustainable in our country. This paper argues that big data in the application of small and medium-sized enterprises financing is effective and feasible. In considering the difficulties of small and medium-sized enterprises financing and the defects of the traditional financing ways, we put forward the new model of financing of small and medium-sized enterprises on the basis of large data technology to promote the financing and development of small and medium-sized enterprises.

1. The research background

The United States, Britain and other European and American countries around the world, are the core of the big data technology research, and the development of government accounting in these countries are relatively mature. But in China, big data research has just started, the reform of government accounting started late, and didn't get any breakthrough results. The government owns the most advanced technology and equipment, the largest organization, the best people, the most of the data sources, so the government can get more big data resources. The coming of the era of big data, has drawn attention to all areas of our country, the state will rise in the government accounting reform to deepen the governance as the goal. Although the road of big data used in the field of accounting is still difficult, as the government accounting reform is in height, the application of big data in government accounting is in the face of challenges now, at the same time, it is ushering the unprecedented opportunity. Wave information is hitting each domain and every corner of the world. The informatization development has become the essential elements for the development of every field. It is leading the development of the industry forefront. With the development of China's accounting field, the government accounting reform is beneficial to improve the management ability, work efficiency and quality of information of government accounting.

2. Under the governance of government accounting reform
2.1 Governance and government accounting

The term "governance" results from classical Latin and ancient Greek, has the meaning of the management and rule. In ancient China, the basic meaning of "governance" is the governance and the rule of government affairs. Under the leadership of the communist party of China since the founding of new China, our country gradually perfected the system of socialist market economy, gradually formed a socialist law system with Chinese characteristics, etc. On the way of governance to go on, we have achieved remarkable results. The third plenary session of 18 passed " A number of major issues on comprehensively deepening the reform set by the central committee of the communist party of China (hereinafter referred to as " decision") ",

which put forward the concept of " governance " for many times. It also " perfect and develop of the socialist system with Chinese characteristics, promote the modernization of national management system and national management ability "as the overall goal of comprehensively deepen reform. Economic development is the inner motive power of governance, governance is the premise and foundation of governance. Since the reform and opening, our country has established the system of socialist market economy, which give priority to the market economy to promote economic development, reform the public sector of the economy by top-down stock, reform the private economy by bottom-up incremental. State governance in terms of economic is striving continuously and driving the innovation of economic development in China.

"Decision" points out that setting up a comprehensive accrual government financial reporting system, which means the government accounting reform kicked off slowly. In November 2015, the ministry of finance promulgated "the government accounting standards - basic principles "(hereinafter referred to as the" basic principles "), and it will be implemented since January 1, 2017. The promotion and implementation of "Basic rules", which is the substantial progress of the reform of government accounting, provides a theoretical basis for the reform of government accounting. In fact, the country put forward the government accounting reform for the first time as early as ten years ago, but did not get any breakthrough achievements. The reform approved by the state council, performed by the government at all levels, and the goal of reform changed from promoting fiscal reform to deepening the national governance. Government accounting reform is picking up, which obtains the unprecedented attention and increasingly becomes an integral part of governance.

2.2 National governance requirements for government accounting reform

Considering that the objective of the government accounting reform has risen to deepen the national governance, in order to promote modernization of the national governance system and management ability, the government accounting reform needs: First, making specific planning of accrual accounting. "Decision" clearly put forward the government uses the accrual basis accounting, which made the center gravity of the after reform is no longer choosing cash accounting or accrual accounting, but the specific strategy implemented in accrual accounting. How to handle the replacement of old and new system, establish a chart of assets and liabilities and establish double-entry become the specific issues that cannot be ignored in the reform. Economic governance is the premise and foundation of state governance, the establishment of accounting system is the primary issue in the government accounting reform. Second, promoting the construction of government accounting informatization to facilitate the government accounting's information disclosure. Restricted by factors such as institutions, government accounting information is hard to be in public, which makes the speed of government accounting development is much lower than our country enterprise development speed. Under the national governance, the government accounting reform should strive to build an information opening, information resource sharing environment to optimize and accelerate the development of government accounting and achieve the goal of fiscal

accountability and fiscal transparency to provide safeguard for the construction of anti-corruption at the same time. Third, promoting democracy in government accounting reform. In our country, "governance" is the party leads the people to manage the country, therefore, the state governance, needs to guarantee the right that the people are masters of the country. In the process of government accounting reform, we need people's participation at all levels. Fourth, everything is related, so we should pay attention to the relationship between each system. Despite the accounting, budget, finance and so on of government's accounting are different, various information systems and subsystems have a close connection between each other, they are parts of the financial information and an important source of information policy.

3. Big data and related techniques
3.1 The connotation of big data
Big data refers to large capacity data measured by" terabyte", and big data technology is a kind of information technology, which is the revolution after the cloud computing again in the information age. Big data is made up of large data sets analyzed by traditional database and management system reasonably. Big data contains both structured data and unstructured data comprised by soft information (telephone, website, social media, video, etc.).

3.2 The characteristics of big data
Big data technology uses cluster technology and virtual machine technology to integrate and segment the huge amounts of data. It is able to integrate and output the dispersive data and split integrated data resources. The use of clustering technology and virtual machine technology in the field of government accounting, meets different needs of users of the data, and improves the precision of government accounting information. The characteristics of the large data are: (a), the data size. The current society is information era developing so rapidly that information quantity cannot be measured by common unit used before. (b), the data diversity. Besides common structured data, there are vast unstructured data and semi-structured data. (c), the data of production and the processing time sensitive. In the era of big data, data rate increases significantly, the data processing efficiency is enhanced greatly. (d), the density of the available data. Information expansion increases the amount of information, at the same time, inevitably brings some problems. Data sources and more information make valuable data increase less than the redundant data, thus results in the decrease of the density of the data. (e), data processing is complex. Because of increasing quantity, processing speed, increasing data types, much more common needs for personalized data, etc., the difficulties of data's analysis, processing, integration and resolution inevitably increase.

3.3 The relevant technology of the large data
1. **The data storage:** The data store must extract and clean data first. Data extraction extrait matching data object from several data source securely and conveniently, which is used as unprocessed raw data. Data cleaning means transferring the original data into the data users need. In the process of data storage, big data technology uses the manner combining block storage technology with centralized management,

segments the file under the premise of not undermine its logical record integrity, processes and analyses the data. For example, when system failure or hardware damage caused the data damaged in the process of extracting, the fault-tolerant mechanism of big data will recover the data from the damage to ensure the security and integrity of data storage.

2. **Data query:** Data query function applies not only to financial information query, also accounting information. SQL on Hadoop technology is used for large unstructured data in data query. SQL on Hadoop technology is mainly used in multidimensional database parallel processing technology and the technology of table partitioning. Multidimensional database parallel processing technology uses the method of analyzing and optimizing the query to get the results, then takes apart the query according to the query results and gets more subquery, finally executes subquery on relevant database node. This method reduces the size of the query data, and greatly improves the efficiency of data query at the same time. Under the table partitioning technology application, data is arranged orderly in certain rule. You will just need scan data area when you need to query data, which reduces the scanning area needed for the data query, and greatly improves the performance of the data query.

3. **Data analysis:** Big data, the analysis of the data, also known as data mining. Data mining technology's requirements for technology is high and difficulty is more complex, but it is the most core part of big data technology application. Data mining mainly adopts the decision tree, regression analysis, the genetic algorithm, association rule, character analysis, neural analysis, classification, clustering and rough set methods. Classification techniques include decision trees, classification, clustering and rough set technology. Classification techniques classify similar data into the same category, and divide them into different parts. After data classification, big data will mine data. The mining technology includes regression analysis, correlation analysis and neural network and so on, data mining is the technology analyzing the relationship between data and trend.

4. The analysis of application in government accounting data

By the end of September 29, 2016, Facebook's market value was $368.2 billion. Big data is increasingly becoming a valuable data resource. Traditional government accounting data is a summary of information which simply identifies and records the accounting behavior and information and prepares the corresponding financial statements in order to meet the needs of the regulators etc. However, there are many types and large number of big data, so we need to filter, dig deep, analyze and handle data, not only use the government accounting data for data records, but forecast the government accounting data and maximize the value of it.

4.1 The main types of data in the application of government accounting

Unstructured data accounts for about 90% in big data structure, and presents the increasing trend. Therefore, to grasp the unstructured data is the key of the application of big data technologies. The analyses the concrete application of the main data source in the structured data are as follows.

1. **Video and image data**
   In the background of rapid development of information technology, the capture of video and image equipment is ubiquitous, and visual data is widespread unprecedently. Today, video and image's acquisition, storage, processing and analysis technology tend to be mature, which make it possible to use these data to promote government accounting records. The method of obtaining objective information from video is improved, which enhances the feasibility of using video data as the government accounting information, especially using it in internal control. In the government accounting reform, the improvement of the internal control system is conducive to the government accounting to be open and transparent, conducive to the fiscal accountability and the implementation of the national anti-corruption.

2. **The audio data**
   Audio data related to government activities can also improve the quality of government accounting records and financial information. Potentially important audio data including those from government departments conference, meetings held by the government with other personnel, organization or internal government staff, etc., and the microphone audio equipment which is put for the purpose of testing government agencies is also an important source of audio data. With the audio data, large data can provide more evidence to support the government accounting records. For example, using recording devices to interview analysis about the budget of office building in the construction will help the government accounting practitioners assess these long-term assets and solve some major obstacles. In addition, to strengthen the analysis of audio data about the masses' satisfaction with the government service and the response to the government's work quality is the embodiment of modernization of the national governance system and ability.

3. **The text data**
   The text data includes non-financial data and soft files. Important text repository includes SEC filings, E-mail, web pages (including corporate web site found files), news media and social media. Social media is the biggest and fastest growing social media text database. For example, as of August 2016 WeChat monthly active users has broken 800 million, and microblog 282 million. Data from social networks such as WeChat, microblog, watercress and others facilitate the evaluation, improvement and innovation of government accounting reform.

4.2 The application of large data
1. **Actively introduce technology of big data**
   Government owns the most advanced technology, equipment, the largest organization and the best talent, and, more importantly, as microblog, Facebook and other enterprises with big data assets developing rapidly, countries also begin to build large data assets in many areas, such as air transportation, insurance, electricity, telecommunications and other industries. Countries own huge amounts of data like transport, taxation, education,

medical and other aspects. These data have great potential value. But as a result of government informatization development hasn't received extensive attention, the data has not been fully developed and utilized. The government accounting reform need to broaden the reform ideas and vision, actively introduce advanced ideas and advanced technology, understand big data technology deeply, eliminate the misunderstanding of big data technology and promote the reform of ideas.

2. **Accelerate staff transformation, training high technical talents**

The advent of big data makes the government accounting reform need not only talents grasp knowledge of government accounting, but inter-disciplinary talents understand the big data and government accounting. The use of accrual accounting in government accounting reform requires to accelerate the transformation to upgrading the financial and accounting personnel to the government accounting in terms of personnel training. In the process of training talents, we should grasp the new knowledge of the government accounting reform, conform to the changes in the era of big data, meet the requirements of the large data environment, grasp the big data technology and new knowledge, master enough professional knowledge and always keep up with the trend of the times. Relative personnel should learn and master the collection, storage, and mining of structured data and unstructured data, and produce high-tech talent set out to the new government accounting under the background of big data.

3. **Strengthen the security of data use**

In matters of large data storage, relative personnel should encrypt, backup and authorize the big data, etc., ensure the data access and management separation, control the access strictly, ensure the safety of big data in the process of inputting and downloading, and avoid the information loss or damage, etc. In terms of data acquisition and transmission, they should verify the personnel in the process of obtaining to safeguard the security and integrity of information and avoid information being stolen or theft. In the process of big data transmission, they should also strengthen the management with the visitor's authentication and access. In terms of large data output, they should avoid information leakage, achieve the security audit. If the information is stolen and leaked, they need take the data source technology to find, process and perfect the link that data reveal from. In addition, formulate the corresponding safety regulations to coordinate each position's function, set explicit collection, review, analysis, data access, divide the work reasonably and supervise the post are all indispensable.

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