Research of the Innovation Strategy of Enterprise Financial Management in the Era of Big Data Using Data Collection Algorithm Model

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Abstract: With the continuous progress of modern science and technology, the arrival of the era of big data, if the advantages of the era of big data can be applied to financial management, it will create more development opportunities for enterprises. Based on this, this paper collects the required data through the data acquisition algorithm model, and mainly discusses the innovation strategy of enterprise financial management in the era of big data. The paper points out that under the background of big data, 1) Enterprises lack of advanced financial management concepts; 2) Enterprises lack the infrastructure to use big data technology; 3) The quality of enterprise financial management personnel is uneven. To solve these problems, this paper puts forward the following suggestions: 1) Establish advanced financial management concept; 2) Introducing sound infrastructure for the application of big data technologies; 3) Strengthen the education and training of enterprise financial management personnel, improve the comprehensive quality of staff. This paper hopes that these suggestions can provide reference for the managers of financial departments of enterprises.

Keywords: The Era of Big Data, Financial Management Activities, Data Collection Algorithm Model, Problems and Suggestions.

1 INTRODUCTION

Big data involves a wide range of fields, including astronomy, atmospheric science, genomics and other fields, as well as military reconnaissance, financial big data, medical big data and other industries [5, 8, 9]. At present, the advantages of big data are gradually highlighted, and the industries penetrated by big data are constantly expanding, such as social networking [6], e-commerce, communication record details and other industries developed by big data help enterprises continue to expand new businesses and innovate operation forms [4, 10]. Since the introduction of the concept of "big data", enterprises have been comprehensively improved and perfected in the estimation of product sales quantity, behaviour evaluation of mass consumption, accurate judgment of marketing scope and supply of stored goods [2].

In the era of big data, there are three changes in public perception: big data is the whole data, not random extraction [11]. Big data is a general direction, not an accurate guide. Big data is correlation, not cause-effect correlation. The application and development of big data

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improves the effectiveness of data for development, provides accurate market data for the judgment of enterprise management departments, and improves the quality of enterprise decision-making [3].

Under the background of big data era, the vast majority of enterprises determine profit acquisition as the direction of operation [1, 7]. Therefore, financial management plays a crucial role in enterprise management activities. In this case, it is of important theoretical and practical significance to explore the innovative strategies of enterprise financial management against the background of big data era to promote social development and progress. What is the impact of the era of big data on the financial management of enterprises, and how to improve the financial management of enterprises under the background of the era of big data are urgent problems to be solved at present.

2 DATA COLLECTION ALGORITHM MODEL

Due to the need for a wide range of data, so this paper with the aid of quantum genetic algorithm to collect data. The flow of this algorithm is as follows:

Begin t=0
(1) initialize Q(t0)
(2) make P(t)by observing the states if Q(t)
(3) evaluate P(t)
(4) store the best solution among P(t) into B(t)
While (not termination condition) do
Begin t=t+1
(5) make P(t)by observing the states if Q(t-1)
(6) evaluate P(t)
(7) update Q(t) using Q-gates
(8) store the best solution among B(t-1) and P(t) into B(t)
(9) store the best solution b among B(t)
(10) if (migrate condition)
Then migrate b or to B(t) globally or locally
END
END

The algorithm first generates the initial population Q(t0). Where, the gene location (α_i^0, β_i^0) of the population is initialized as $(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}})$, so that the population chromosome is equal to the superposition of all states and equal probabilities:

$$\left|\psi_{q_i^0}>=\sum_{k=1}^{2^m}\frac{1}{\sqrt{2^m}}\right|S_k>$$

where, S is composed of binary string (x_1, x_2,…, x_m) with length m, representing the k^{th} state of the chromosome. x_i(i=1,2,3,…,m) is either 0 or 1.

The second step of the algorithm is to scan all the individuals in the population once and obtain a set of solutions $p(t) = \{p_1^t, p_2^t, \dots, p_n^t\}$. Here, p is used to represent the JTH solution in the T-generation population, which is composed of m bits of binary, where each bit is 0 or 1, and the bit value of binary is the probability amplitude of quantum bits ($|\alpha_{ij}^t|^2 or\ |\beta_{ij}^t|^2, i = 1,2,\dots,m$) decided.

Then determine whether the loop termination condition is satisfied. If yes, the algorithm ends. Otherwise, the relevant quantum genetic manipulation is performed to further manipulate the chromosomes and create a new population. As the loop continues to execute, the algorithm will slowly converge to the optimal solution.

3 THE NECESSITY OF APPLYING BIG DATA TECHNOLOGY IN THE FIELD OF ENTERPRISE FINANCIAL MANAGEMENT

3.1 The Application of Big Data Technology is an Inevitable Trend of Historical Development

The application of big data technology can fundamentally improve the efficiency of enterprise financial management, significantly improve the quality of enterprise follow-up work, and make enterprise operation more coordinated and unified. Big data technology enables departments to perform tasks more systematically. Under the guidance of big data technology, all kinds of work can be operated methodically, so that the management level of enterprises can be continuously improved imperceptibly. The popularization and wide application of big data technology is the inevitable trend of historical development. More and more enterprises actively use it in daily operation. Therefore, the financial staff of each enterprise should set up advanced ideas to keep pace with The Times and keep up with the development trend of The Times, so that the implementation of more work of the enterprise has intelligent characteristics.

The innovation of data management system can improve the implementation efficiency of subsequent financial work of enterprises. The managers involved need to take a longer view. Select and apply the most suitable data and information integration software according to the actual situation of the enterprise, so as to improve the quality and efficiency of the enterprise financial management. Enterprise managers can make a more suitable enterprise operation plan according to the information displayed in relevant software, and omit redundant steps of enterprise management. Effectively improve the quality of related work, keep pace with The Times, so that the enterprise financial management can be guided by new technology with modern characteristics, so that the enterprise internal personnel can understand the market development situation, to ensure that the quality of the work and the decision can be significantly improved.

3.2 The Application of Big Data Technology Can Effectively Meet the Actual Development Needs of Enterprises

If big data technology is widely used in enterprise financial management, enterprise managers need to have a long-term vision of development. The advanced information technology and

the actual situation of the enterprise organic integration. Fundamentally change the original pattern of traditional financial management. The implementation of each financial management work can grasp the essence of innovative thinking. Promote the implementation of follow-up work to break the shackles of old ideas, and fundamentally improve the efficiency of financial management work. Enterprises actively use big data technology to perform various financial management tasks, in fact, is an important reflection of self-improvement. Only in this way, enterprise managers can develop more perfect enterprise management policies, so that the implementation of all work can be based on evidence. Therefore, it is extremely necessary to make reasonable planning for the work in the field of financial management. This requires workers in the field to have sufficient sense of innovation, so that enterprises can take advantage of the complex market environment. The gradual popularization of big data technology can effectively help enterprises expand development space, promote enterprises to achieve higher achievements in financial management, and obtain more customer information resources. The application of big data technology also makes more employees realize the importance of innovation consciousness, and they can actively use their spare time to study and learn advanced technologies, which promotes the comprehensive ability of each employee to be significantly improved.

3.3 The Automated Office Model is Convenient to Implement

With the rapid development of big data technology in recent years, the speed of information transmission has been improved. The speed of information transmission has been significantly improved, and the efficiency of financial management has also been improved. In the past financial management of enterprises, many tasks need to be completed manually, which leads to the implementation of a lot of work prone to manual errors. For each job management will face more complex problems, resulting in the quality of financial management work is seriously affected, the value of management work is greatly discounted. A lot of important data information is likely to be lost or omitted in the manual operation, which will give the enterprise financial management work buried security risks. The active application of big data technology is the inevitable trend of historical development, and also the problem that enterprises need to focus on in the process of operation. The application of big data technology can improve the efficiency of the original complex financial data analysis work, so that the staff of various departments of the enterprise can have a deep understanding of the actual business status of the enterprise, and can promote the staff of the enterprise to understand the key content of the follow-up work in the more detailed financial data statements, and determine the work objectives in time.

4 ANALYSES OF THE QUESTIONS OF ENTERPRISE FINANCIAL MANAGEMENT IN THE ERA OF BIG DATA

4.1 Enterprises Lack of Advanced Financial Management Concepts

Now, the era of big data has come, and many enterprises have noticed the impact of the era of big data on enterprises. However, some enterprises in the process of carrying out financial management activities, still use the previous management forms and management ideas, and have not made corresponding changes. In a word, the form and concept of financial

management of enterprises lag behind, mainly in the following three aspects. First of all, enterprises do not take big data technology as an effective measure and way to carry out financial management activities. When enterprises carry out financial management activities, they still use the previous technical analysis methods, resulting in inaccurate data analysis results. Secondly, the enterprise financial management personnel did not transmit or convey the big data application requirements to the enterprise's internal financial workers. This leads to enterprise financial workers in the process of carrying out financial management activities, there is no awareness of the application of big data analysis technology. Finally, many enterprise executives believe that the cost of applying big data technology is too high and the benefits obtained are too little, so they do not support the use of big data technology to analyse data within the enterprise. It is precisely because of such backward financial management concept, hindering the progress of enterprises, resulting in many enterprises cannot feel the benefits of big data technology.

4.2 Enterprises Lack the Infrastructure to Use Big Data Technology

In the process of applying big data technology, many enterprises are faced with a common problem, which is the lack of reasonable use of big data technology infrastructure. The so-called big data means that the amount of data is extremely large. The computers purchased by enterprises in the past simply cannot meet the requirements of data storage in the era of big data. This is because the capacity of the traditional computer is too small, the amount of data of the enterprise is too large, there is no way to meet the needs of the enterprise, resulting in the enterprise cannot use the corresponding technology to implement big data analysis. Not only that, many small and medium-sized enterprises have not built the corresponding financial management processing system, which more limited the application of big data technology. If enterprises want to make use of big data technology in the process of carrying out financial management activities, they must build sound infrastructure that is compatible with the use of big data technology, and lay a solid foundation for enterprises to apply the corresponding big data technology.

4.3 The Quality of Enterprise Financial Management Personnel is Uneven

With the advent of the era of big data, enterprises have gradually improved their standards for financial management personnel. The standard of this quality is not only reflected in meeting the requirements of professional literacy, but also embodied in information technology literacy. One of the most critical is the knowledge related to the computer level. Because enterprise managers must carry out computer-related operations in the process of using big data technology to solve financial activities. If employees do not understand the basic computer control technology, there is no way to complete the corresponding work. However, from the current situation of comprehensive quality of most enterprise workers, many financial managers lack the skills to apply big data technology; The quality of enterprise financial management workers is uneven; As a result, enterprises cannot reasonably apply big data skills in the process of financial management activities. Therefore, enterprises should pay attention to the training and selection of enterprise financial management workers, improve the comprehensive quality of enterprise financial management workers, and lay a foundation for enterprise personnel to apply big data technology to carry out financial management work.

5 NEW STRATEGIES FOR ENTERPRISE FINANCIAL MANAGEMENT IN THE ERA OF BIG DATA

5.1 Establish Advanced Financial Management Concept

Enterprises must change the concept of financial management, establish a scientific concept of financial management that conforms to the development needs of the era of big data, and create a good environment for the application of big data skills in financial management. Enterprises should guide employees to use big data skills to carry out financial management activities and establish financial management concepts. Enterprise managers or senior executives need to deeply explore knowledge related to big data and guide employees to establish a sense of big data application. Enterprise managers should actively create an enterprise culture that is helpful to the application of big data, and encourage and support enterprise financial management workers to actively practice big data analysis and other skills. At the same time, the enterprise should regularly carry out publicity and training activities related to the era of big data, so that the enterprise financial management workers abandon the previous traditional backward financial ideas, and establish the big data thought system of financial management personnel. The enterprise should change the salary and reward system and associate the salary and reward system with the application of big data technology, so that the staff should not only do things well, but also pay attention to the efficiency of work, so as to ensure the real application of big data technology in the process of financial management activities of the enterprise, so that it can play an important role.

Figure 1 shows the analysis of the profit level of Chinese financial companies from 2014 to 2019, suggesting that financial management occupies an increasing proportion in the Chinese market and is becoming more and more important.

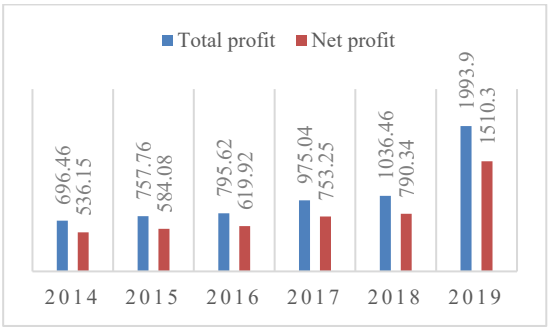

Figure 1 the analysis of the profit level of Chinese financial companies from 2014 to 2019 (unit: 100 million yuan).

5.2 Introducing Sound Infrastructure for the Application of Big Data Technologies

If enterprises want to reasonably apply the corresponding big data technology, they should first improve the basic equipment. Only when the hardware is in place are employees likely to discuss how to apply big data technology. However, from the current actual situation, the vast majority of Chinese enterprises have not introduced sound infrastructure to assist enterprises to apply big data technology. Many companies still use old computers for data analysis, which

constrains the use of big data within the enterprise. If enterprises want to increase the frequency of big data application, they need to check whether they have the basic equipment related to big data application. According to the verification results, the corresponding facilities of the enterprise shall be improved or replaced. Generally speaking, this process is very easy to suffer resistance from the corresponding staff, especially the company's investment staff. Because investors will feel that this will increase the cost load of the enterprise. It is not helpful to the development of the enterprise. At this time, the actual management of the enterprise is required to communicate and adjust, to ensure that the enterprise can successfully complete the introduction of basic equipment. The actual management personnel of enterprises must communicate with investment personnel in the form of teaching, and cannot use too extreme ways. For example, coerce investment personnel, require investment personnel must accept their own planning scheme. Such behaviour will only lead to a dilemma in communication, unable to give full play to the role of big data technology.

5.3 Strengthen the Education and Training of Enterprise Financial Management Personnel, Improve the Comprehensive Quality of Staff

When enterprises use big data technology for financial management, they also need to deal with an important problem, that is, the quality of personnel. If the enterprise lacks some highly literate financial management workers, then in the process of carrying out financial management activities, the application of big data will only become an empty word and cannot be implemented. Therefore, enterprises must enhance the training of enterprise financial management staff. More staff training is needed. Not only should the corresponding professional quality of financial management personnel be improved, but also the application level of big data technology of financial management personnel should be further improved. Efficient control of the computer, for the enterprise financial management work efficient development to provide talent support.

6 CONCLUSIONS

To sum up, enterprises must learn how to apply big data technology in financial management under the background of big data era, effectively improve the application ability and application quality of big data technology of enterprises, improve the level of enterprise financial management, and promote the sustainable development of enterprises.

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