

Research on the Transformation of Financial Accounting to Management Accounting under the Background of Big Data Combined with Algorithm Model

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Abstract: With the advent of the era of big data, big data provides technical support for enterprises' financial activities, and produces massive data, which has a great influence on our country's economic development. The transformation of financial accounting to management accounting based on big data technology has become the development trend of the information age and is also the inevitable requirement of enterprise development. Based on this, this paper firstly collects and processes the required data using the statistical algorithm model, and then analyses the significance of the transformation from financial accounting to management accounting under the background of big data. Finally, the paper concludes that 1) enterprises need to guide financial personnel, completely change the traditional work concept, to ensure that management accounting work can meet the needs of modern development of enterprises. 2) Only the integration of financial and management accounting can reduce the consumption of financial and human resources and improve the internal management system. 3) On the basis of the introduction of advanced information platform, innovate management accounting concepts, ensure the rationality and authenticity of data, and significantly improve the economic value of enterprises.

Keywords: Big Data, Financial Accounting, Management Accounting, Algorithm Model, Risk Control.

1 INTRODUCTION

With the continuous development of information technology, enterprises need to shift from financial accounting to management accounting in order to get further development and play the application significance of big data [3, 4, 8]. As an important part of the enterprise, the financial management department is affected by the development of information technology [5, 12, 15]. The work and management form of financial accounting can no longer meet the needs of enterprise management. In order to change this situation, it is necessary for managers to clarify the development direction of the big data background and accelerate the transformation of management accounting [2, 10, 13]. However, in the process of transformation and adjustment, managers need to actively guide and help accounting personnel learn information technology, optimize the working mode of management accounting, achieve the purpose of improving the

efficiency of information resource integration, and promote the operation and development of enterprises [2, 5, 10, 13].

The era of big data has the characteristics of large amount of data, strong authenticity, and can carry out centralized data processing in a short time [1, 11]. In the actual operation process, enterprises will produce a large amount of data. Only reasonable use of data processing technology to ensure the integrity of data information can provide a basis for various business decisions [1, 7, 9]. Enterprises realize the transformation and development of financial accounting to management accounting, timely find the shortcomings of financial control, pay attention to the whole process of risk control, strengthen the capital supervision and management, can play the basic function of financial control, avoid unnecessary financial risks and business risks, improve the core competitiveness of enterprises [2, 7, 9].

This paper analyses the significance of the transformation from financial accounting to management accounting under the background of big data, and puts forward several measures to innovate the concept of accounting management data, realize the integration of financial accounting and management accounting, and establish a big data financial information platform, hoping to provide reference for relevant people.

2 ALGORITHM MODEL [14]

In order to better mine the data, this paper uses K harmonic mean arithmetic (KHM) clustering algorithm to collect the data.

2.1 Introduction for Algorithm Model

The following is a brief introduction to the basic information of the algorithm:

KHM clustering algorithm is based on central iterative process. Assuming that $Z = \{Z_1, Z_2, \dots, Z_n\}$ is a set of data, including $Z_i = \{Z_{i,1}, Z_{i,2}, \dots, Z_{i,n}\}$ said with m an attribute of a data object, cluster number k , the clustering centre set to $C = \{C_1, C_2, \dots, C_k\}$. The following are the main differences between KHM clustering algorithm and K-means algorithm:

(1) In KHM algorithm, the minimum distance function in K-means algorithm is replaced by harmonic mean function, and the harmonic mean formula is:

$$\frac{k}{\sum_{c \in C} \frac{1}{d^2(z, c)}}$$

where, $z \in Z$ represents the object in the data set, $c \in C$ represents the clustering centre, and $d^2(z, c)$ is the distance measure function.

(2) The objective function of l deletion algorithm is:

$$E_{KHM} = \sum_{z \in Z} \frac{k}{\sum_{c \in C} \frac{1}{d^2(z, c)}}$$

where, E_{KHM} represents the sum of the harmonic mean of all data points to the centre of each cluster.

(3) The central iteration formula is mainly used to update the clustering centre, and its expression is as follows:

$$c_k = \frac{\sum_{z \in Z} \frac{1}{(\sum_{y \in Y} \frac{d^2(z, c_k)}{d^2(z, y)})^2} z}{\sum_{z \in Z} \frac{1}{(\sum_{y \in Y} \frac{d^2(z, c_k)}{d^2(z, y)})^2}}$$

2.2 Clustering Result Evaluation Method

F-measure was obtained by synthesizing Precision and Recall in the field of information retrieval. In this paper, F-measure was used to evaluate the clustering results. For known classification i and arbitrary cluster j , the accuracy and recall ratio are defined as:

$$P(i, j) = \frac{M_{ij}}{M_i}$$

$$R(i, j) = \frac{M_{ij}}{M_j}$$

The M_i in the formula represents the number of objects in class i . M_j represents the number of objects in cluster j . M_{ij} represents the number of objects belonging to a given class i in cluster j . F-measure of classification i can be defined as:

$$F(i) = \frac{2PR}{P + R}$$

$P=P(i, j)$ and $R=R(i, j)$ in the formula. Think of $F(i)$ as the system's score for classification i . Consider the cluster with the highest $F(i)$ value as the corresponding classification i . The total F-measure is the weighted average of each class i :

$$F - measure = \frac{\sum_{i \in N} |i| \times F(i)}{\sum_{i \in N} |i|}$$

where, N represents all known classes, and $|i|$ represents the number of objects in class i . The larger the F-measure is, the better the clustering effect is.

3 THE SIGNIFICANCE OF THE TRANSITION FROM FINANCIAL ACCOUNTING TO MANAGEMENT ACCOUNTING UNDER THE BACKGROUND OF BIG DATA

3.1 Correct Handling of Accounting Information Data

Based on the background of big data, the growth rate of information is accelerating. However, due to the limited financial accounting processing capacity of the enterprise, it is unable to organize the data in a short time, and it cannot meet the requirements of the development of informatization for the enterprise. The introduction of the concept of management accounting can not only deal with financial information, but also deal with non-financial information and

information, and carry out the classification of various information data, so as to formulate a perfect economic development plan. Only by making a reasonable development plan can we improve the level of funds used by enterprises. Relevant staff should be combined with the use of data, plan clear standards, and constantly improve management efficiency. According to the needs of enterprise accounting work is not difficult to know, in order to achieve the restraint of accounting personnel, it is necessary to analyse the qualified standards of accounting positions and ensure the unified management of data content.

3.2 Strengthen Financial Supervision

The integration of information technology and management accounting can improve the accounting management efficiency of enterprises to a certain extent, and constantly strengthen supervision and control. The adoption of cloud accounting services can make financial personnel not restricted by place and time, but strengthen the communication and exchange of various departments, and realize the transformation of financial accounting. While implementing the management accounting concept, I can prepare medium - and long-term development goals. In addition, big data technology is taken as the core content to prepare financial planning programs, thus providing important basis for various production and business activities and conducive to the analysis of financial reports.

3.3 Promote Enterprise Development

Enterprise financial accounting in the application of traditional methods of work, its focus is to statistical financial applications to draw a perfect statement. Managers can understand the status quo of economic development of enterprises through this content, and then adjust operations according to the development of enterprises. Although financial accounting has the function of summarizing data, management accounting can analyse financial information from multiple angles to improve the purpose of fine processing. For example, when sorting out information, management accounting will focus on the recent financial situation and the future development trend of enterprises ^[5]. By applying this method to financial management, the problems existing in the development of enterprises can be found in time. After understanding this situation, managers can make timely adjustments to avoid financial damage, promote enterprise development and improve the overall level of the enterprise.

3.4 Meet the Development Needs of Financial Accounting

Influenced by the era of big data, all walks of life gradually adjust their work forms. Enterprise financial internal data processing has also taken place a certain change. In the application of traditional methods to process accounting data information, due to the large amount of various information data, information screening and sorting work is more difficult, once the problem of data errors, will directly affect the operation and development of enterprises. However, after integrating big data technology into enterprises and transforming to management accounting, the system can quickly read data information and improve the efficiency of information sorting and classification. This work form has high timeliness and integrity, and can meet the needs of accounting development.

4 THE DIFFERENCE BETWEEN FINANCIAL ACCOUNTING AND MANAGEMENT ACCOUNTING

4.1 Different Work Priorities

In order to further understand the differences between financial accounting and management accounting, it can be discussed from the perspective of different work priorities. Financial accounting needs to take statements as the basis when working. By showing the operation of the enterprise to managers in this way, the focus of financial accounting is to sort out the financial situation of the enterprise. However, the goal of management accounting is to serve the internal management of enterprises, so it is necessary to study the operation and management of enterprises and provide theoretical reference for managers to make decisions. Under the background of big data, financial accounting needs to apply advanced technology to sort out enterprise information data, improve the timeliness of work and the accuracy of data information, and have a clear understanding of enterprise expenditure and income. For instance, we can check 5G direct/indirect economic output scale in 2020-2030 in the Figure 1.

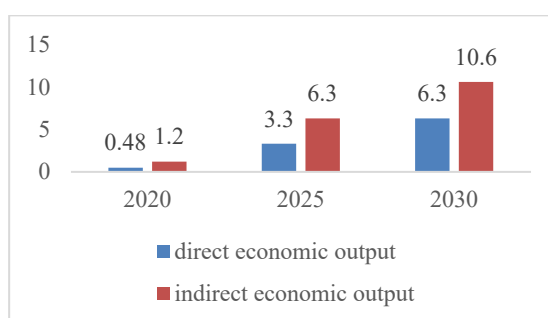


Figure 1 5G direct/indirect economic output scale in 2020-2030 (Unit: trillion Yuan).

4.2 Different Work Characteristics

The job of financial accounting is to convey financial information. Financial personnel often make all kinds of enterprise financial statements in the work, is also the main work characteristics of financial accounting. And management accounting work, because this work needs to meet all kinds of enterprise management needs. Due to the different formats of information, staff are required to flexibly sort out various types of reports, which makes the work of management accounting characterized by the characteristics of diversified report forms. We could see from Figure 2 that Change Trend of China Satellite Communication Market Size from 2015 to 2020.



Figure 2 Change Trend of China Satellite Communication Market Size from 2015 to 2020 (unit: 100 million Yuan).

5 THE EFFECTIVE PATH OF TRANSFORMATION FROM FINANCIAL ACCOUNTING TO MANAGEMENT ACCOUNTING UNDER THE BACKGROUND OF BIG DATA

5.1 Innovation of Accounting Management Data Concept, Accelerate the Pace of Accounting Information Construction

Under the background of continuous progress and development of Chinese society, the traditional way of financial accounting is outdated. Due to the changing management requirements of enterprises, the requirements of financial management are not only the preparation of perfect financial statements, records of daily expenditure work, will also require the implementation of budget management and performance management. Because of the direct connection between the functions of financial accounting and management accounting, we can carry out the assessment of various financial work. But the basic function of financial accounting is to carry out accounting work. Management accounting is the content of money as the core, using the way of recording, calculation, measurement, to achieve the record of the consumption of funds in various business activities of enterprises. Therefore, the enterprise management personnel need to analyse the financial accounting management mechanism, combined with financial accounting statements and fund flow situation, intuitive understanding of the financial development of the enterprise. By analysing the change direction of management accounting, managers can make reasonable use of the information platform and implement the integrated management of financial information data, which provides an important basis for the reasonable allocation of funds. By constantly increasing the research on construction projects, various departments can communicate with each other through the information system, effectively accelerate the speed of information flow and transmission, and ensure the rationality of enterprise management decisions.

5.2 Realize the Integration of Financial Accounting and Management Accounting to Implement the Whole Process of Risk Control

Based on the background of the era of big data, the speed and effectiveness of information transmission have put forward clear requirements for the processing of accounting information. Traditional accounting work of enterprises cannot meet the needs of current

strategic development. Only by shortening the time consumed by accountants in the accounting process can we create higher social and economic benefits for enterprises. The work of management accounting pays more attention to the work of forecasting and financial planning, and guarantees the authenticity of accounting data, which is reflected in the following aspects: traditional financial accounting is to prepare financial statements, to summarize and process the financial data of each year, ignoring the analysis of the external environment and internal environment. The reasonable application of information technology can effectively shorten the time consumed in accounting, and carry out pre-risk control and extended management in the process. Only by taking financial analysis as the basis and providing the corresponding data support, can we avoid the occurrence of financial risk problems. Enterprise financial personnel to clear the requirements of the new accounting standards, and as a basic guidance. Combined with the financial situation of the enterprise, formulate a perfect accounting management system. Enterprises improve the risk warning mechanism by establishing a modern information platform. When there is a big difference between the budget target and the actual situation, the system can give timely warning and take measures to solve the problem as soon as possible. Take an enterprise as an example, the enterprise will financially accounting and management accounting integration, and strengthen the control of cost management, combined with the basic characteristics of product production and quality level. In the production process of different varieties, reduce the expenditure of fixed costs as far as possible, and put forward requirements on production efficiency and quality, and constantly adjust the business situation of the enterprise. Only by controlling the possible risks within a reasonable range can the cost be reduced.

It can be seen from this that management accounting can implement effective financial constraints no matter in the preparation of financial statements or information accounting. Make reasonable use of big data technology to promote the exchange and communication between the financial department and other departments, formulate long-term development plans in combination with the budget objectives and financial conditions of the enterprise, carry out overall forecasting activities in combination with the changes in the market environment, and promote the smooth development of various business activities.

5.3 Establish a Big Data Financial Information Platform and Carry Out Performance Appraisal

First of all, enterprises should optimize the content of financial management and show the advantages of management accounting. Enterprise financial personnel need to analyse the development of big data technology, adjust and optimize the industrial structure. Only by changing the financial content can we realize the data management and innovation of various business projects. In the whole process of financial integration, the external value of the enterprise is analysed, advanced technologies such as big data and cloud platform are scientifically introduced, the work of management accounting is gradually improved, the long-term financial control mechanism is introduced, the investment activities and financial budget of the enterprise are analysed, the management accounting information content is established, and relatively complete accounting management methods are formulated.

Secondly, the establishment of data resource library within the enterprise can not only ensure the accuracy of accounting data, but also provide convenience for financial personnel and management personnel to inquire. By establishing a financial sharing centre, enterprises can

ensure that they can enjoy data information and integrate historical data with the data of various departments. And in a unified platform for accounting, the preparation of sound financial statements, for the major business decisions to provide an important basis. Finally, the work of the enterprise is analysed to realize the combination of big data resource platform and financial data. Carry out comprehensive performance appraisal to improve the comprehensive ability of financial staff. While improving the performance evaluation system, the advantages of management accounting will be brought into play to realize the risk control work and the rational allocation of resources at the same time. As long as the basic management standards are clear and the assessment process of personnel is improved, their work behaviour can be restricted. In the process of the construction of the big data financial management platform, combined with the functions of enterprise business and management accounting, accelerate the speed of the transformation of financial management accounting work, make reasonable use of big data resources, carry out accounting data processing and analysis, so that the efficiency of financial management can be significantly improved.

5.4 Make Rational Use of Big Data

Big data should be applied reasonably in the transition from financial accounting to management accounting. Because big data can improve the integrity and comprehensiveness of management accounting work, management accounting needs to apply big data reasonably and give play to the practical significance of big data background. In order to achieve this goal. Managers can build perfect big data systems. For example, managers can hire technicians to design big data systems and set alarm systems in big data systems. Once there is a security breach in the big data system, the big data system can automatically monitor and issue an alert. Technical personnel can timely understand the cause of this problem, and timely optimize and adjust the treatment, so as to ensure the stable operation of management accounting and achieve the purpose of promoting the transformation of enterprise financial accounting to management accounting ^[2]. This method can not only improve the financial management level of enterprises, but also further enhance the comprehensive strength of enterprises. In addition, economist Liu Jinzhe pointed out: because the security of this big data system directly affects the stability of enterprise economic operation, in the application of big data, must be reasonable application. If the application of unreasonable phenomenon, it will seriously affect the situation of enterprise financial management. Therefore, in order to solve these problems and ensure the rationality of big data application, special personnel must be found to manage the big data system, regularly check the running status of the big data system as well as loopholes and problems, timely optimize and update the system, and prevent big problems. Only in this way can we improve the operation level of big data systems and enhance the competitiveness of enterprises. In addition, in order to avoid the problem of low application ability of management accounting, it is necessary to build a management team, develop perfect big data application and management standards, and develop application standards. Every management accountant needs to organize information and data according to this standard. Managers in the inspection and management, once found information, data arrangement does not meet the standards of the problem, the managers can be punished in a timely manner, to promote the development of enterprise financial accounting transformation to management accounting under the background of big data.

6 CONCLUSIONS

In a word, the application of management accounting is a huge task, the need for management personnel and each department staff to cooperate, and realize the transformation of traditional accounting to management accounting development. Enterprises need to guide financial personnel, completely change the traditional working concept, and ensure that the management accounting work can meet the needs of modern development of enterprises. Only the integration of financial accounting and management accounting can reduce the consumption of financial resources and human resources, and improve the internal management system. On the basis of the introduction of advanced information platform, the innovation of management accounting concept, ensure the rationality and authenticity of data, promote the economic value of enterprises significantly.

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