Research on Object-oriented Management Accounting
Dynamic Budget Management based on Big Data

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Abstract. The advent of the big data era makes a lot of work face the situation that will be eliminated or left behind without following the trend of reform. This article begins with a simple metaphor to illustrate the importance of management accounting in the enterprise, later pointed out the current management accounting in the development of the enterprise facing four problems, targeted put forward in the application of big data management accounting many advantages, and illustrate with examples, so that this study to achieve the unity of theory and practice, and we will discuss it from the perspective of the analysis of big data.

Keywords: Big Data, Management Accounting, Budget Management

1. Introduction
The 20th century is an era of great development of data and information. Mobile Internet, social network, e-commerce and so on have greatly expanded the boundary and application scope of the Internet. At the same time, the Internet of things, such as car networking, GPS medical images, security monitoring, finance and telecommunications are all crazy to produce data. All kinds of data are rapidly expanding and increasing. Big data has triggered changes in life, work and thinking. Management accounting is new from western countries. As an important branch of accounting, unlike financial accounting, it mainly serves the managers of enterprises, combining the current economic development situation and financial data of enterprises, and helping enterprise managers to make decisions on the development direction of enterprises. For example, when an enterprise buys coffee beans, records its quantity, price, etc., but fretting about what kind of coffee they should be made, this makes management accounting plays its own role by collecting information on coffee beans and combining with the current market demand, making forecast, and promoting the development of enterprises[1-3]. At present, China's economy has entered a new period from high-speed development to quality improvement, through tax reduction, fee reduction and a number of "management service" reform policies to vigorously promote the development of the real economy. Under this background, it
is urgent to make full use of the big data platform of computer technology to improve the application of management accounting.

2. Difficulties faced by management accounting under the current situation

2.1. Management accounting and other branches of accounting confusion

Financial accounting and management accounting have different object-oriented and job responsibilities, as two important branches of accounting, there are mutual constraints and complementary relations between them. Financial accounting mainly analyzes and collates the financial situation of enterprises, collates and controls the inflow and outflow of funds, while management accounting mainly uses the data collated by financial accounting to combine with the current economic development situation to carry out in-depth analysis to help enterprise managers have a clear understanding of the current development situation of enterprises, and can better decide the future development situation of enterprises and solve some problems encountered in the development of enterprises[4]. So the connection between financial accounting and management accounting is close, but the connection between management accounting and financial accounting in many enterprises is not coordinated, even the two are independent of each other, which greatly reduces the efficiency of accounting work, limits the development of management accounting, and also makes the development of enterprises slow. For example, when an enterprise knows the use of coffee beans and has a sales channel, it also needs to know its cost, price, profit and so on, in order to better sell coffee and profit from it. This is the result of the coordination of management accounting and financial accounting.

2.2. Disturbance and constraint by external environment

Because the reform of socialist market economy in our country has caused chaotic market economic order and indirectly restricted the development of management accounting in enterprises, it is mainly caused by the following two aspects: first, because of the confusion of the current market economy, the internal and external environment of enterprises is full of unknown, it is more difficult for enterprises to obtain market information, which affects the prediction and decision-making role of management accounting and cannot help enterprise managers to make decisions well; Second, due to the imperfect legal documents in management accounting in our country at present, for example, for enterprises in different regions, there are different tax law regulation, which makes the management accounting work cannot be carried out in a fair and just environment, which greatly reduces the usefulness and relevance of these forecasts as well as decision-making information, and thus limits the use of management accounting.

2.3. Seldom get due attention in the enterprise

Because the management accounting system of our country is not perfect and the rules and regulations of the enterprise are not complete, although it can help enterprise managers to play the decision-making role very well, many enterprises pay less attention to it, and make the development of management accounting slow. Many enterprise managers do not have a deep understanding of management accounting, and do not know its importance to the development of enterprises either. Under traditional methods, enterprises plan, control and evaluate current economic activities based on
past experience, which lead to management accounting considered to be dispensable in enterprises. It is precisely due to this idea that management accounting professionals are few, mainly because enterprises do not pay attention to the introduction of management accounting professionals and do not carry out late training work on time. Therefore, management accounting work does not play its usefulness in the management of enterprises, which greatly limits the development of enterprises.

2.4. The mismatch between domestic management accounting and the development of national conditions

China's management accounting in the theoretical level is lack of operational control and not well combined with the actual economic situation. Because the management accounting is introduced from the west, and stays in some western works on the theoretical level, our country still needs to read the foreign language material to carry on the research, which has reduced our country to the management accounting manipulation on the theoretical level, although its work system is very suitable for the western enterprise, the culture and economic form are different between the countries, therefore the western management accounting system cannot achieve the effect as our country related enterprises hope. Since it is inconsistent with our country economic situation, enterprise application effect is not obvious, which would reduce the working efficiency of Chinese enterprises. Moreover, there is not a complete set of rules and regulations for reference in the management accounting work, which makes it impossible for the staff to follow the evidence and investigate the violation. Thus how to better control the research work of management accounting in our country on the theoretical level and better combine the management accounting work with the economic situation of our country is a problem that we should consider.

3. Taking advantage of big data in object-oriented management accounting

With the rapid development of enterprises, the management of all aspects of data and business activities will also increase. Although traditional management has the ability to store, process and analyze data, it is very difficult for complex data processing. This is not conducive to the development of enterprises. So in order to adapt to the development of international economy, domestic enterprises should fully grasp the trend of economic development and manage the enterprises with big data accounting. Under such a social background, how to effectively combine the traditional management accounting theory with the era of big data and apply it to the management accounting of enterprises is a problem worth studying[5-7]. First of all, we should fully analyze big data, provide more accurate basis for management accounting, help management accounting play its due role, and help broaden the scope of work of management accounting. Secondly, enterprises can provide effective accounting management plan through the results of big data analysis. Compared with big data, traditional management accounting can not get accurate and reliable data. From the perspective of future development of enterprise economy, the use of big data accounting makes the data collected by enterprise management accounting information become larger, more accurate and more reliable. Finally, the efficient use of big data accounting realizes the maximization of enterprise value and provides the practical basis for correct decision-making.

3.1. Analysis on the structure of big data accounting data

As we all know, big data has become an equally important strategic resource as other natural
With the arrival of big data era, the process and analysis of financial data have undergone great changes. The emergence of big data makes accounting information more reliable and stable. From the perspective of accounting and business, the fundamental purpose of accounting is to help enterprises master financial information, so as to improve the value in the market economy, reduce financial costs, and improve the efficiency of accounting systems. Accounting data can be directly obtained in the daily management of various departments in the enterprise during the process of collection. Data is collected as part of this work. The cost actually includes internal employees’ salary while this part of the cost data collection does not require additional costs. Since analysis is not difficult, workers can accomplish it without spending additional costs. When use unstructured and fragmented accounting data, large organizations or companies are usually required because of the cost and over-cost of running big data platforms. Since the data collection is complex and analytical technology needs particular process, professional firm is required. Therefore, when using unstructured, fragmented accounting information, the company may have to pay additional fees to process the company with dedicated big data, which would result in additional costs. Moreover, the unstructured and fragmented application of accounting data is a gradual process, which also leads to the data structure of big data accounting based on the composition to be long-term direct data such as money. Figure 1 shows the forecast flow under the management accounting dynamic budget.

![Diagram](image_url)

**Figure 1.** Prediction process under management accounting dynamic budget

3.2. Big data promotes the systematization and comprehensiveness of accounting data
Although in the era of big data, unstructured and decentralized data can not clearly reflect and verify the company's production and operation process, a large amount of unstructured and decentralized data can be used to analyze its relevance and enterprise value. In traditional accounting theory, accounting data is basically quantitative descriptive data, mainly monetary data. However, unstructured and fragmented accounting data overcome the inherent limitations that small sample data must use causal analysis. Correlation analysis with large sample data can achieve the same effect as causal analysis. Therefore, in the era of big data, these qualitatively described data and unstructured, fragmented data enrich the types of accounting data and broaden the sources of accounting data.

4. Application of big data

At present, with the development of computer technology and information technology, it is no longer a difficult problem to collect a large number of basic data needed prediction, but in the face of a large number of data, it is quite difficult to make scientific and reasonable judgment on the basis of in-depth analysis, and it is easy to miss business opportunities that enterprises should have. At the same time, dynamic budget prediction is a complex dynamic process involving all aspects of its own business activities and external business environment, which contains a lot of factors that are not controlled by managers and state uncertainty. Since there are subjective and objective aspects as well as internal and external enterprises, it is difficult to make accurate judgment simply by using traditional models and methods to greatly improve the accuracy and timeliness of prediction results. The big data information processing flow is shown in Figure 2.

![Data processing process](image)

**Figure 2.** Data processing process

Specifically, the advantages of applying data mining technology in dynamic budget prediction are mainly reflected in: first, automatic detection of previously undiscovered patterns. Data mining tools scan the entire database and identify hidden patterns, such as analyzing retail data to identify seemingly unconnected products that are actually sold together in many cases; instead, data mining technology can automate existing software and hardware and can be implemented on upgraded or newly developed platforms. When a data mining tool runs on a high-performance parallel processing system, it can analyze a large database in minutes. Data mining can automatically find potential prediction information in large databases. Questions that traditionally require expert analysis can now be answered quickly and directly from the data.
5. Conclusion

Compared with the current budget management model, the object-oriented dynamic budget management model proposed in this paper has the unique advantages of dynamic budget management and natural integration with information technology, which can solve the difficulties of static, adaptability and adjustment of the current budget management model, and lay a theoretical foundation for the application and development of advanced information technology in budget management. This paper provides the basis for further research on how to perfect and develop the theoretical model, but from the point of view of the practical application of the model, we still need to continue to explore in the following two aspects:(1) the object-oriented dynamic budget management model, although it has theoretical innovation, it has not been tested in practice and it is necessary to further explore and study its feasibility and maneuverability. (2) The realization of the object-oriented dynamic budget management function by means of information technology is the ideal choice for the realization of this model.

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