



# On the Impact of Big Data on Management Accounting

\*Fengrui Liu

Hunan University

\*Email: 1280538273@qq.com

**Abstract.** This paper discusses the impact of Big data on management accounting. With the rapid development of information technology and the continuous enhancement of data storage capacity, Big data has become an indispensable part of enterprise management. In the field of management accounting, the application of Big data is attracting wide attention. This paper first introduces the concept and role of management accounting, and then analyzes the application of Big data in management accounting, including data collection, processing, analysis and prediction. Then it discusses the impact of Big data on the role and skill requirements of management accountants, and looks forward to the future development of Big data in the field of management accounting. This paper aims to provide management accounting professionals and enterprise decision-makers with certain references and references to help them better cope with the management challenges of the Big data era.

**Keywords:** Big data, management accounting, data collection, data processing, data analysis, data forecasting

## 1 Introduction

With the continuous advancement of global informatization and digitization, enterprises are facing the emergence of massive amounts of data. Big data has become an important factor affecting enterprise management and decision-making. In this context, management accounting, as an important support for enterprise decision-making, has also faced unprecedented challenges and opportunities. This paper aims to explore the impact of Big data on management accounting, and provide some reference for management accounting professionals and enterprise decision-makers.

## 2 The concept and role of management accounting

As an important branch of accounting discipline, management accounting is a discipline that provides information and data support for enterprise management and decision-making. Its main goal is to help business leaders effectively plan, control, and make decisions to achieve the strategic and operational goals of the enterprise. In modern enterprise management, management accounting plays an irreplaceable role.

© The Author(s) 2023

A. Bhunia et al. (eds.), *Proceedings of the 2023 International Conference on Finance, Trade and Business Management (FTBM 2023)*, Advances in Economics, Business and Management Research 264, [https://doi.org/10.2991/978-94-6463-298-9\\_33](https://doi.org/10.2991/978-94-6463-298-9_33)

Firstly, management accounting obtains a large amount of data and information related to the internal operations of the enterprise through the data collection process. These data cover the financial status, production status, sales status, human resource status, and other aspects of the enterprise, providing a solid foundation for decision-making. For example, by collecting financial data, management accounting can understand the assets and liabilities of a company, analyze its profitability and solvency; By collecting production data, one can understand production efficiency and cost structure; By collecting sales data, one can understand the market demand for products and the situation of competitors; By collecting human resource data, one can understand employee turnover rates and performance status. These data provide comprehensive and accurate information on the state of the enterprise for business leaders, helping them make decisions.

Secondly, management accounting processes, analyzes, and integrates these data to transform them into meaningful information. By analyzing data, management accounting can discover patterns and trends within a company, help leaders grasp market dynamics, competitive advantages, and make more informed strategic decision <sup>[1]</sup>. For example, through data analysis, management accounting can discover the sales growth trend of a certain product in a specific market, thereby adjusting production plans and marketing strategies; It is possible to identify inefficient links in a certain workflow and optimize the production process; It is possible to discover the preferences of the customer group and improve product design. These data analysis results provide insights and decision-making basis for business leaders, helping them make wise decisions in complex and ever-changing market environments.

Then, management accounting can use data forecasting to predict the future operating conditions of the enterprise. Management accounting can help enterprises predict future sales, profit levels, cost changes, etc. by analyzing and modeling historical data, providing scientific basis for enterprise decision-making. For example, through time series analysis, sales trends in the coming quarters can be predicted; Through regression analysis, sales growth can be predicted under different market promotion inputs; Through artificial intelligence technology, prediction models can be established based on massive data to predict future market competition trends. These data prediction results help enterprise leaders to make plans and countermeasures, and enhance the enterprise's resilience and competitive advantage.

### **3 Application of Big data in management accounting**

#### **3.1 Data Collection**

In the era of Big data, management accounting is faced with massive and diversified data sources. The traditional manual collection method is no longer able to meet this demand, so more efficient and intelligent data collection tools and methods need to be adopted. Modern enterprises can use various information technology means, including Enterprise resource planning system, customer relationship management system, supply chain management system, etc., to obtain all kinds of data in real time <sup>[2]</sup>. ERP system is an information system that integrates and manages various business functions

of an enterprise. Through it, management accountants can obtain real-time financial data, procurement and sales data, inventory data, etc. of the enterprise. CRM systems can help enterprises collect and manage customer related data, including customer contact information, purchase history, customer satisfaction, etc. The supply chain management system can track and monitor the supply chain activities of enterprises, collect data related to suppliers, logistics, and inventory. The application of these systems enables management accountants to more efficiently obtain data from various aspects within the enterprise, thereby better supporting the decision-making and operation of the enterprise. In addition to internal systems, management accountants can also use technologies such as the Internet, social media, and the Internet of Things to collect data on market dynamics, customer needs, competitors, and other aspects. For example, an e-commerce enterprise can collect a large amount of data on user browsing behavior, purchasing behavior, comments, and reviews through its website and mobile applications. At the same time, using data mining techniques on social media, users' comments and feedback on social networks can be obtained. These data can help companies understand user preferences and needs, thereby optimizing product design and marketing strategies.

### **3.2 Data processing**

The processing of Big data is an important task of management accounting. In the process of data processing, it is necessary to clean, integrate, and classify massive amounts of data for subsequent data analysis and application. The accuracy and completeness of data are crucial for the quality of management accounting work. Data processing can rely on various data processing tools and technologies, such as data warehouse, data mining and Data and information visualization. A data warehouse can integrate and store data from different sources, providing a foundation for data analysis. Data mining technology can help management accountants discover hidden patterns and trends from the vast and complex data. Data and information visualization technology can transform complex data into intuitive charts and graphs to help management accountants better understand data and make wise decisions<sup>[3]</sup>. For example, a manufacturing enterprise can use a data warehouse system to integrate and store data from multiple links such as production lines, supply chains, warehousing, etc. Through data mining technology, the relationship between process parameters and quality indicators on the production line can be analyzed, and key factors affecting product quality can be identified. Through Data and information visualization technology, these analysis results can be presented in an intuitive chart to help enterprise managers better understand the production situation and take timely measures to improve production efficiency and product quality.

### **3.3 Data Analysis**

Big data analysis is the core link in management accounting. Through data analysis, management accounting can extract useful information from massive amounts of data, helping business leaders make wise decisions. Data analysis can be based on statistical methods, as well as utilizing advanced technologies such as artificial intelligence and

machine learning. In data analysis, commonly used methods include data mining, regression analysis, time series analysis, etc. Data mining is a technique that discovers patterns and patterns from a large amount of data through automatic or semi-automatic means. It can help discover hidden patterns and patterns in data, providing support for enterprise marketing and customer relationship management. For example, through data mining technology, an e-commerce enterprise can analyze users' purchase history, browsing behavior, and click data, discover users' purchase preferences and interests, and optimize personalized recommendations and marketing strategies.

Regression analysis is a statistical method used to explore the relationship between different variables. In management accounting, regression analysis can help understand the impact of different factors on corporate performance. For example, a manufacturing enterprise can study the relationship between production costs and product quality through regression analysis, identify the main factors that affect product costs and quality, and develop strategies for cost control and quality optimization.

Time series analysis is a method used to analyze time series data, discover patterns and trends, and predict future values. In management accounting, time series analysis can be used to predict future operating conditions and help enterprises prepare contingency plans and response measures. For example, a retail enterprise can use time series analysis to predict sales trends in the coming months, in order to develop reasonable purchasing plans and inventory strategy<sup>[4]</sup>.

### 3.4 Data prediction

Data forecasting based on Big data is an important function of management accounting. By analyzing and modeling historical data, management accounting can predict future operating conditions and help enterprises prepare contingency plans and response measures. Data prediction can be based on methods such as time series analysis, regression analysis, and artificial intelligence.

Time series analysis can predict future sales trends based on past sales data and seasonal changes. In the retail industry, time series analysis can help companies predict sales in the coming months, thereby adjusting purchasing plans, optimizing shelf display, and promoting strategies.

Regression analysis can establish a mathematical model between sales revenue, advertising investment, promotional activities, and other factors based on past experience, in order to predict sales performance at different investment levels. In marketing, regression analysis can help companies predict the impact of different marketing strategies on sales, thereby optimizing budget allocation for advertising and promotional activities.

Artificial intelligence technology can use machine learning algorithms to make intelligent predictions according to the patterns and laws in Big data. In the financial field, artificial intelligence can help predict changes in financial indicators such as stock prices and currency exchange rates, thereby assisting investment decision-making and risk management.

To sum up, data analysis and data prediction are important work of management accounting in the era of Big data. Through the application of these technologies, management accounting can better understand the business situation and Market trend of enterprises, and provide accurate and reliable support for enterprise decision-making. The era of Big data has brought more opportunities and challenges to management accountants. Only by constantly learning and applying advanced data analysis technology can we maintain competitive advantage in the competitive market.

### **3.5 The impact of Big data on the role and skill requirements of management accountants**

The era of Big data has had a profound impact on the role and skill requirements of management accountants. Traditional management accountants are mainly responsible for collecting and processing financial and internal data of enterprises, providing support for business decision-making. However, in the era of Big data, enterprises are faced with massive and complex data, and simple data collection and processing can no longer meet the needs of enterprises<sup>[5]</sup>. Management accountants need to discover more business opportunities from data and provide more comprehensive and in-depth data analysis to help enterprises formulate strategies and decisions.

First of all, in the era of Big data, the role of management accountants has changed to that of data analysts and forecasters. This is because the extensive application of Big data makes enterprises face massive and complex data. Traditional data processing is not enough to meet the needs of enterprises. Now, management accountants need to have advanced data analysis technologies, such as data mining, machine learning, artificial intelligence, etc., to mine valuable information and trends from Big data. The application of data analysis technology can help management accountants better understand market demand, product sales, customer behavior, etc., providing more accurate and comprehensive basis for enterprise decision-making.

Secondly, in the era of Big data, forecasting ability has become an important element in the work of management accountants. Since Big data includes not only historical data, but also real-time data and future data, management accountants need to analyze historical data and establish models to predict future business conditions and market trends. Through data prediction, management accountants can help enterprises formulate long-term development plans and risk control strategies, providing support for enterprises to seize opportunities in the fiercely competitive market.

At the same time, the Big data era also requires higher skills for management accountants. Management accountants need to have solid financial and accounting knowledge in order to have a deep understanding of the financial situation and business model of the enterprise. However, pure financial knowledge is not enough to meet the challenges of the Big data era, so management accountants also need to master information technology and data science knowledge. For example, Data cleansing technology can help management accountants deal with the messy information in data and maintain the accuracy and integrity of data; Data integration technology can help management accountants integrate data from different sources together, forming a more comprehensive and comprehensive data view; Data modeling technology can help

management accountants build models to predict future trends and conduct decision analysis. The mastery of these skills can help management accountants better handle and analyze Big data and provide accurate and timely information support for enterprise decision-making.

There is a multinational manufacturing enterprise facing the challenge of global market competition. Traditional management accountants can only understand the operational status of enterprises by collecting and processing historical data, and cannot predict market changes and competitive dynamics in advance. With the introduction of Big data technology, management accountants began to use data mining and machine learning technology to analyze massive Market data and competitor data. Through the analysis of Market trend and competitive situation, they can predict the potential of an emerging market and the trend of competitors in advance. Based on these predicted information, the enterprise has timely adjusted its product positioning and market strategy, successfully occupying a leading position in emerging markets.

To sum up, Big data has had an important impact on the role and skill requirements of management accountants. Management accountants need to transform from data processors to data analysts and forecasters, with a greater emphasis on discovering business opportunities and predicting the future from data. At the same time, they need to have knowledge of information technology and data science to better meet the challenges of the Big data era. Only by adapting to the requirements of the Big data era can management accountants play a more important and effective role in enterprise decision-making.

#### **4 Prospects for the future development of Big data in the field of management accounting**

In the future, the development of Big data in the field of management accounting will continue to be in-depth and widely applied. With the continuous progress of science and technology and the increasing improvement of data technology, Big data will provide management accountants with more powerful tools and methods to achieve more accurate and efficient data analysis and decision support. The following are some prospects for the future development of Big data in the field of management accounting:

First, Big data technology will be more intelligent in the future, and management accountants can automatically analyze and identify laws and trends in data through artificial intelligence, machine learning and other technologies. Data intelligence will greatly improve the working efficiency of management accountants, reduce Human error, and provide more accurate data analysis and prediction results.

Secondly, with the popularization of the Internet of Things and sensor technology, enterprises will be able to collect and transmit a large amount of data in real-time. Management accountants can use real-time data to monitor business operations, market dynamics, and customer behavior, adjust decisions and strategies in a timely manner, and better respond to market changes and competitive challenges.

Third, in the future, Big data technology will pay more attention to data integration and sharing. Data from different departments and business areas will be integrated together to form a more comprehensive and comprehensive data view. Management accountants can conduct comprehensive data analysis to gain a deeper understanding of the impact of internal and external factors on the business, and provide decision-making recommendations with a more global perspective.

Fourth, with the wide application of Big data, data security and privacy protection will become important topics. Management accountants need to strengthen their awareness of data security and take preventive measures to ensure that sensitive information and trade secrets of enterprises are not leaked or abused.

Fifth, with the popularization of Big data technology, management accountants in the future need to have more knowledge and skills in data science and information technology. Relevant training and learning will become necessary to meet the professional requirements of management accountants in the era of Big data.

Sixth, in the era of Big data, data use ethics and social responsibility issues will receive much attention. Management accountants need to pay attention to ethics and compliance in data analysis and decision-making processes, avoid data abuse and improper behavior, and ensure that data is used in accordance with the principles of legality, impartiality, and fairness.

## 5 Conclusion

Big data has become an indispensable part of enterprise management and has had a profound impact on management accounting. In the era of Big data, management accounting needs to play a more important role in data collection, processing, analysis and prediction. At the same time, Big data also brings new challenges and opportunities to the role and skill requirements of management accountants. Only by constantly improving their data analysis and technical capabilities can management accountants be invincible in the era of Big data and provide more accurate and timely support for enterprise decision-making.

## References

1. Yang Yuwei. Research on the Impact and Role of the Big data Era on Enterprise Management Accounting [J]. *Shinise Marketing*, 2023 (10): 154-156
2. Liu Xia. Research on the Change of Enterprise Management Accounting in the Era of Big data [J]. *China Collective Economy*, 2023 (10): 49-52
3. Shang Yingying. Analysis on the development trend and application status of management accounting in the context of Big data [J]. *Office Automation*, 2023,28 (07): 62-64
4. Wang Hongxun. Research on the Application of Financial Shared Service Management Accounting in the Big data Era [J]. *China Market*, 2023 (04): 154-156
5. Mu Wenhui. On the Impact of Big data on Management Accounting [J]. *Financial Literature*, 2022 (08): 57-59

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

