

# *Analysis on Innovation and Development of Accounting Industry Based on Genetic Algorithm*

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**Abstract:** Nowadays, China has entered the BD (Big Data Technology) era, and people's life and production mode have undergone epoch-making changes. New changes have taken place in the accounting industry, and the responsibilities of financial human resources have also expanded. This paper discusses the financial business problems in detail, summarizes the genetic algorithm, and puts forward innovative solutions as a reference, and provides some suggestions for the normal operation of the accounting industry under the background of genetic algorithm. In the investigation on the improvement of the innovation and development of accounting industry by genetic algorithm, 60 people think that the improvement is very good in financial analysis, the current financial accounting business is basically inseparable from BDT, 96% of BDT cases are often used in daily business. 3% use BDT occasionally in daily work, and 1% don't need to use BDT, and this paper will promote the innovation and development of accounting industry.

## 1. Introduction

Big data technology (BDT) originated from the awakening and application of the network, and is now widely used in many fields. The application of BDT helps enterprises to observe market trends, seize market opportunities and strengthen overall competitiveness. Big data should put forward new requirements for enterprise data storage and analysis, and realize new changes through management accounting [1-2]. Management accounting provides data support for enterprise operation. Management accounting is based on data. Information asymmetry is common in traditional models, which easily leads to wrong decision-making and control behavior of enterprises due to information omission or information error. It reduces the asymmetry of information and greatly improves the timeliness, accuracy and efficiency of news gathering. Enterprises can easily obtain a lot of information, and management accounting can provide useful reference materials for the budget, decision-making and evaluation process of enterprises. The arrival of the era of centralized information processing has made the role of enterprise accounting more clearly, provided technical support and pointed out the future development direction.

In the BD era, financial services should not only use financial processing and analysis, but also use data resources through the goods provided. Collect relevant financial data through financial

automation system and make effective analysis to maximize the role of accounting business [3]. In practical work, it is necessary to analyze the information activities of information proposals. Through the technical application, resource creation and advanced analysis of BD, it can be seen that the account function in BD era will affect the decision-making and operation of enterprises. Consumers show their purchase intention by analyzing consumption types [4-5]. The accounting industry is looking for connections with companies that operate large amounts of data. Financial information should be used to the maximum extent, and participate in major enterprise decisions to effectively reduce financial risks and operations.

## 2. Related work

With the rapid development of today's society, the traditional financial accounting management model can no longer meet the development needs of the company, while management accounting conforms to the trend of the times, and its development conforms to the continuous improvement of social productivity. It helps enterprises to carry out modern management methods, improve the modern accounting management system, ensure the authenticity and accuracy of accounting information, and lay a solid foundation for the company's development strategy. Sun Xufen believes that as the main body of national economic development, accounting major is also the first subject to face transformation. As a branch of enterprise accounting, management accounting is equivalent to financial accounting and independent from traditional accounting. He briefly introduced the emergence and development of management accounting, and discussed the development of management accounting industry under the "new normal" [6]. Li Yupeng discussed how to promote the development and innovation of management accounting from the perspective of the current development and innovation of management accounting [7]. Zandi G intends to analyze the impact of environmental performance of enterprises from the perspectives of environmental innovation and knowledge management. His main purpose is to explore how environmental accounting can promote knowledge transfer, green innovation and environmental performance of small and medium-sized enterprises in Indonesia [8]. However, their research lacks the exploration of innovative schemes for the accounting industry.

Under the background of BD and genetic algorithm, the difficulty of financial computerization is due to the lack of independent research and development technology in China, and it is difficult to establish enterprise-wide [9]. Large enterprises in China simply can't extend the method of using BD in financial work to small and medium-sized enterprises. The financial software matching with centralized information processing is not perfect, and the actual situation of enterprises cannot match the software well [10]. In this way, the accounting and financial activities carried out by enterprises cannot be well combined with BD, and there are serious problems in the accounting industry in China, and there is a lack of data analysis talents.

## 3. Method

### 3.1 Genetic Algorithm

Genetic algorithm is a biological evolution model based on the law of biological evolution in nature. It imitates the natural selection and genetic mechanism in Darwin's biological evolution theory, and on this basis, it is optimized. On this basis, the genetic algorithm is used to obtain the optimal individual by means of selection, crossover and mutation, and the corresponding numerical value is the best parameter of the model. On this basis, a risk grade evaluation criterion is established and the risk grade is judged, so as to achieve the purpose of risk evaluation of financial resource sharing management. Genetic algorithm can be used for innovative development, such as

optimizing financial decision-making and improving audit efficiency.

Fitness function:

$$\text{Fitness} = w1 * Pf + w2 * Rk + w3 * \text{Time} \quad (1)$$

Where Pf stands for profit and Rk stands for risk.

Selection operator:

$$P(i) = \text{Fitness}(i) / \sum \text{Fitness}(j) \quad (2)$$

Where P (i) represents the probability of individual i being selected, and Fitness (i) represents the fitness value of individual i.

Crossover operator:

$$X1 = X1 + X2 * (X2 - X1) \quad (3)$$

$$X2 = X2 + X1 * (X1 - X2) \quad (4)$$

Where X1 and X2 represent parent individuals.

Mutation operator:

$$X = \Delta X * (\text{Rnd} - 0.5) \frac{1}{2} (1 + (1 - 2P_j^i)) \quad (5)$$

Where x represents the step size of individual variation, and Rnd is a random number in the range of [0, 1].

### 3.2 Genetic Algorithm to Promote the Innovation and Development of Accounting Industry

(1) The accounting process needs to be reorganized.

The rapid development of data technology brings a lot of convenience to work and life, but it also brings new opportunities and challenges to the development of various industries. Accounting services play an important role in the development of various industries. The emergence of the network has enabled the accounting business process to be re-integrated, which means that the data is properly processed in the current accounting business process, so that the data and financial reporting items can be consistent and the accounting data can better meet the needs of external information users. However, in reality, when using information, information will be lost because of the preferences and deviations of information users. With the continuous development of modern information technology, the information processing system is becoming more and more modern, which can effectively prevent the information loss caused by artificial accounting processing, optimize the accounting business process and prevent some bad behaviors [11-12].

(2) Financial data need to be shared.

The traditional financial work has its limitations. The focus of its work is financial accounting, and financial personnel should focus most of their energy on repetitive basic work. Therefore, there are still some shortcomings in its core financial management work. For example, the lack of in-depth analysis of financial data, the unreasonable operation of funds and the unscientific planning are all factors that restrict the sustainable and healthy development of accounting profession. In the era of internet plus, it provided a modern platform for the operation of enterprises, and it improved the information of operation, production and sales. The collection of this information can use modern methods to analyze these data and make management decisions more scientific and reasonable. The application of modern information in this industry can make all departments more closely linked, improve the efficiency of information use, better integrate information, thus improving the accuracy of guiding decision-making, and enabling enterprises to realize full-time decision-making and full-time innovation in accounting management [13].

### (3) Management accounting needs to be transformed

In the reform of management accounting, the most important task is to organically combine the financial and development strategies of enterprises [14]. The core task of management accounting is to realize the work of budgeting, accounting and accounting of enterprise finance, so as to realize the effective innovation of enterprise internal management. Therefore, relevant enterprises should make full use of the advantages of network to reform and upgrade management accounting, so as to make it more scientific and reasonable.

### (4) The audit scope has changed.

The development of network technology has not only brought about the concepts and methods of accounting work, but also brought about major changes in the audit field. With the more and more extensive application of accounting information system in e-commerce, its research field is also expanding, and the fields involved are also expanding [15]; At the same time, due to the sharing of network resources, it is more difficult to monitor network behavior, and problems such as information leakage are more likely to occur. Generally speaking, the audit work currently included in e-commerce activities is completed through the network platform, and the development of the network has also improved the audit field and the quality of auditors. If the accounting industry can develop continuously and healthily under the environment of Internet development, the relevant staff should not only constantly learn the knowledge of auditing, but also have certain network technology, so as to improve their professional quality and working ability as a whole.

## 4. Results and Discussion

### 4.1 Experimental Scheme

#### (1) Test object

In order to analyze the current situation of financial accounting industry more deeply, this paper selects 100 financial accounting industry practitioners. The data of questionnaire survey is used to focus on the influence of information processing technology on accounting industry. Secondly, the report will use the characteristics of centralized information processing to explore the innovative development direction and countermeasures of the accounting industry combined with BD. Financial personnel have the ability of data collection and analysis, and have an absolute advantage in BD analysis. If financial personnel want to serve performance management through centralized information processing, they must improve their comprehensive quality and ability.

#### (2) Experimental design

This questionnaire survey is based on the on-site questionnaire survey, and 100 experimental questionnaires are selected and released from 100 accountants in this area to determine whether the application of BDT is effective for the business efficiency of the accounting industry. Second, understand the functional position of genetic algorithm in financial accounting industry, and derive the research of application and functional application.

Table 1: Investigation on the improvement of innovation and development of accounting industry by genetic algorithm

Different aspects	The improvement is very good	Improvement is average	No improvement
Financial analysis	60	40	10
Cost control	64	30	6
Risk Management	50	30	20
Internal auditing	30	40	30

The investigation on the improvement of innovation and development of accounting industry by genetic algorithm is shown in Table 1. In terms of financial analysis, 60 people think the improvement is very good, 40 think the improvement is average, and 10 people think there is no improvement. In terms of cost control, 64 people think that the improvement is very good, 30 people think that the improvement is general, and 6 people think that there is no improvement.

The impact of BDT on financial and accounting efficiency is shown in Figure 1. It can be seen that BDT is applicable in the accounting industry at present. The data shows that 89.00% of the employees surveyed have greatly improved their work quality after using BDT (good results). Grafting BDT into the accounting industry can improve the work efficiency of employees. It is very important to cultivate talents in the financial accounting industry.

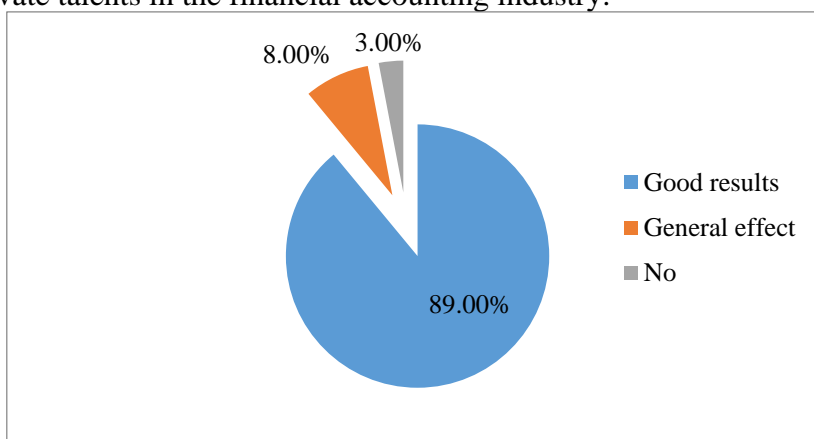


Figure 1: Influence of 1. BDT on financial and accounting efficiency

The application of BDT in management accounting industry is shown in Figure 2. As can be seen from the data in Figure 2, the current financial accounting business is basically inseparable from BDT. According to the data, 96% of BDT cases are often used in daily business. 3% use BDT occasionally in daily work, and 1% don't need to use BDT.

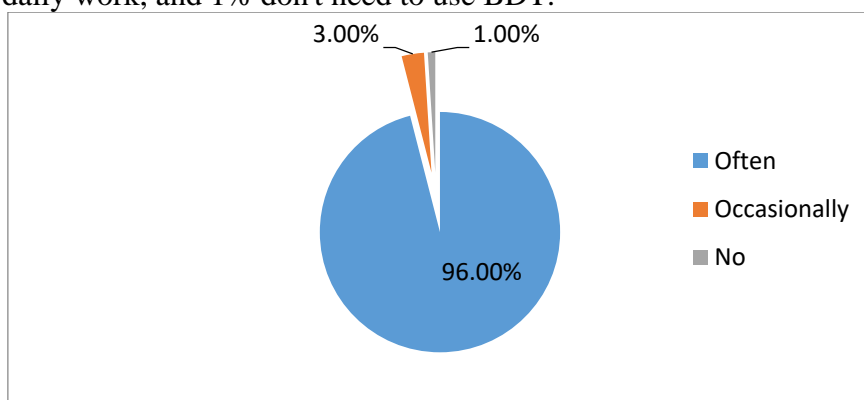


Figure 2: The application of 2.BDT in management accounting.

#### 4.2 Strategy of Innovation and Development of Accounting Industry Based on Genetic Algorithm

(1) The reform of the original concept of accounting workers.

Work concept has a great influence on improving the work efficiency of individuals and groups. A good work concept can promote the progress and development of individuals and groups, while a bad work concept will hinder the improvement of work efficiency of individuals and groups. In order to give full play to the role of genetic algorithm in the development of this industry, so as to

promote the development of this industry and improve its quality and efficiency, we should start from the following aspects. First of all, to change the thinking of relevant leaders and staff, relevant departments should organize an accounting job and regularly participate in online training, so that they can realize the importance of this job, update their working concepts, clarify the existing problems in their current work, and take effective measures to deal with them; Secondly, relevant managers should be allowed to change their original work style, so that their work is more scientific and reasonable, and they can treat and implement all the work seriously at work; Finally, the relevant departments should establish a business organization with good overall performance, so that this industry can make full use of the function of "internet plus", make the development of this industry more perfect, and then promote the innovative development of this industry.

(2) Promote the transformation of accounting industry and upgrade management technology.

This is of great help to improve the efficiency of management. The primary task of scientific and technological renewal of accounting industry is to make appropriate changes, strengthen the management information of accounting industry, and make the management mode and technology of this industry more informationized and modernized. With the rapid development of information technology, it is the general trend for enterprises to operate in a scientific way, which is also the basis for enterprises to improve their operating quality and efficiency. In specific work, the key point is to strengthen the information processing of accounting profession and improve work efficiency through the organization and management of file information. The development of intelligent genetic algorithm has promoted the scientific and technological renewal of accounting industry, improved the quality and efficiency of accounting professional work, promoted the transformation and upgrading of accounting industry, and made this work more scientific and effective.

(3) Improve the professional quality of employees.

In the current development process of accounting industry, the professional quality of relevant personnel needs to be improved, and the professional quality and professional quality of staff is the key to improve the quality and efficiency of accounting work. Relevant departments should conduct regular training for employees to improve their professional quality, so that they can acquire certain legal awareness in the training process, abide by relevant rules and regulations in their work, and have advanced work concepts, so that they can master relevant professional skills and improve their professional quality. In the usual accounting work, we can use our professional skills to improve the quality and efficiency of our work. After training them, the relevant departments should do a good job of guiding them to apply their professional ideas and practical operations in their work. In addition, in order to make accounting work more scientific and reasonable, relevant departments should regularly recruit more accounting talents with professional knowledge and quality, so as to make the team of accounting employees stronger, improve their comprehensive quality, enable them to do their jobs better in their work, give full play to their role in the industry and promote the sustainable and healthy development of the company. In addition, we can also implement the responsibility system to link the responsibility system with the interests of employees, so as to stimulate their work enthusiasm and initiative and improve work efficiency, thus improving work efficiency.

(4) Establish and improve the management system of accounting specialty.

The accounting industry is a very complicated job. In order to make the positive effect of BD strategy play an effective role and promote the reform and development of the accounting industry, it is necessary to construct and improve the relevant operating mechanism in the practice process. In the actual operation process, we should first strengthen the standardization of accounting work to prevent information leakage and misappropriation; Secondly, we should strengthen the construction and improvement of the operating mechanism of accounting professional management, so that

employees can be treated fairly and justly in their work. In this way, relevant personnel can get timely feedback, correct their own problems in time, and improve work efficiency. In this way, employees can pass the information about the problems they encounter in their work or the wages and benefits they want to get to the relevant leaders, so as to make the internal development of the accounting industry more stable and improve the quality and efficiency of their work.

## 5. Conclusion

If the external conditions change, the company should adjust some of the most important accounting structures. This paper is helpful to the rapid and healthy development of the accounting industry. At the same time, in order to improve the overall quality of accountants, it is necessary to transition from financial accounting to business accounting in the future and contribute outstanding talents to social development and society.

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