

# Research on Improving the Talent Incentive Mechanism of Artificial Intelligence Industry in China

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## Abstract

Under the double drives of national attention and market demand, the artificial intelligence industry in China has developed rapidly in recent years. However, the problem lacking artificial intelligence talents is very prominent which should not be ignored. The loss of them is closely related to the imperfect incentive mechanism. Therefore, in order to better improve the talent incentive mechanism and help enterprises retain talented people, research will provide effective countermeasures mainly from two angles, government and enterprise. For example, the government should strengthen the planning of the talent incentive system; the company ought to vigorously promote the property rights incentive program and etc.

## Keywords

Artificial Intelligence, Incentive Mechanism, Talent, Current Situation and Problems, Countermeasures

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## 1. The Necessity and Significance of Research

### 1.1. Necessity

#### 1.1.1. The National Attention

Driven by new theories such as the Internet, Big Data, sensor networks, and people's desire to pursue a better life, the artificial intelligence industry has accelerated its development. It has become a new focus for a country's future strategic technologies and international competitiveness. For example, the British government has listed cutting-edge technologies such as "artificial intelligence, fifth-generation mobile communication technology, intelligent energy technolo-

gies and robotics” as the national strategic core after Brexit. In 2016, the Japanese government passed the new “Japan Rejuvenation Strategy”. The artificial intelligence technology is regarded as the core cutting-edge technology of the fourth industrial revolution. On June 9, 2014, at the Seventeenth Academician’s Conference of the Chinese Academy of Sciences, General Secretary Xi Jinping gave a speech that “robot revolution” was expected to become a point of entry and an important growth point for the “third industrial revolution”. He also stressed that China must step up the layout of artificial intelligence and seize the key point of technology and market [1].

In order to build the first-mover advantage in the development of artificial intelligence in China, accelerate the construction of innovative country and the world’s scientific and technological power, on July 20, 2017, the State Council publicly released the “New Generation Artificial Intelligence Development Plan”. It included many important aspects which were made in a detailed plan, such as strategic situation, general requirements, key tasks and safeguard measures [2]. In the plan, the importance of high-end talent reserves was emphasized. After the party’s 18th National Congress of the People’s Republic of China, it pointed out that “more emphasis should be placed on strengthening the incentive mechanism and giving more material and spiritual rewards to talent” in an innovation-driven strategy.

### **1.1.2. Market Demand**

As the development of artificial intelligence becomes much more important and the market is gradually expanding, the demand for artificial intelligence talent is also increasing. For example, the demand for the integration of manufacturing industry and artificial intelligence is particularly high. Because many companies have realized that the application of artificial intelligence can reduce labor costs and environmental protection investment. According to the “Artificial Intelligence Employment Market Demand and Development Research Report”, which was released on December 12, 2017, the demand for artificial intelligence talents has increased nearly twice in the year. With more and more entrepreneurial companies joining the business start-up tide, a lot of talent demand has been created. According to statistics, the demand for artificial intelligence talents increased by 179% in the third quarter of 2017 compared with the first quarter of 2016, which is nearly three times the demand for talent in the first quarter of 2016. Because these talents are scarce, the talent gap in many positions needs to rely on similar industries to “refill” or heavily import. This is not only costly but also does not fundamentally solve the talent problem. The key to the scarcity of talent of companies lies in the fact that it is not the absence of talent, but the loss of talent. The real reason for the brain drain is the imperfection of the incentive mechanism. Therefore, the reform and innovation of the incentive mechanism indeed have a profound impact on the development of the artificial intelligence industry.

## 1.2. Meaning

### 1.2.1. Reduce the Cost and Talent Loss

An effective incentive mechanism can make employees full of passion, which is an important means of retaining talent [3]. High-tech industries such as artificial intelligence should pay more attention to the significance of improving talent incentives. If the talent is lost due to inappropriate and imperfect incentives, the cost of looking for alternative talent is very high. For example, IFLYTEK CO., LTD., a software company specializing in speech recognition technology, once caused a lot of R&D and management personnel to leave because of unreasonable compensation management and severe SOE style, which have led to a series of problems, such as stagnation of product development, loss of key technologies, and difficulties in finding suitable talent in a short time. These intangible high costs have greatly affected the future of the company. Therefore, an efficient and fair human resource incentive mechanism plays a decisive role in the retention of talents and must be taken seriously.

### 1.2.2. Motivate Enthusiasm and Further Tap Talent Potential

Talent is the main force for the development of artificial intelligence. At the same time, the improvement of talents' own qualities and capabilities is also crucial to the development of the enterprises. An effective incentive mechanism can mobilize the enthusiasm and the passion of talents to participate in R&D from various aspects, such as the work environment, salary bonuses, and challenging goals. Talents are different from ordinary corporate employees. They have great characteristics in terms of personality, values, and personal needs [4]. The mobilization of enthusiasm can further tap into their potential, and thus promote the development of technology. For example, Alibaba Network Technology Co., Ltd., in order to allow talents to continue to maintain a conscious work status and inspire their innovative inspiration, the company established a standard and detailed evaluation system to understand the personality and needs of each senior R&D personnel.

## 2. The Implementation Status and Problems of Talent Incentive Mechanism

### 2.1. Implementation Status

#### 2.1.1. Material Incentive as the Main Method

Artificial intelligence talent incentive mechanism is mainly based on material incentives, among which bonus is one of the most commonly used and direct methods. According to Maslow's hierarchy of needs, the realization of each person's needs is cumulative, and without underlying foundation, no one can reach at a higher level. The most basic need is the physiological needs, and the corresponding incentive means is salary incentive, which has both health care and incentive effect. Since this is the lowest psychological demand as a laborer, high-end talents also need to be satisfied. Therefore, high-tech industries such as artificial intelligence still use material incentives as the main measure. For ex-

ample, in the aspect of material incentives for Huawei Corporation, one of the requirements for the allocation of shares is to emphasize continuous contribution.

### **2.1.2. General Application of Wage Collective Negotiation System**

As early as the 20th century, the collective wage negotiation system has gradually been allowed in foreign countries, such as: New Zealand, Austria, the Netherlands, Switzerland, Germany, France, and the United States, etc [5]. Under the influence of developed countries, the collective wage negotiation system has gradually started to develop in Chinese enterprises. This is more attractive to talents than the original individual salary method. According to a survey conducted by the earlier State Council Development Research Center (2004), among all types of domestic enterprises, 24.7% R&D personnel's fixed wages in R&D account for less than 40%. In high-tech enterprises such as artificial intelligence, the wage negotiation system has increasingly become the main method for the conclusion of pay contracts for technology talents.

## **2.2. Problems**

### **2.2.1. Limited to the Tactical Layer**

Many artificial intelligence companies are affected by traditional personnel management concepts. Static system control and management are very common in the companies. Leadership style and methods do not meet the management requirements of high-tech industrial human resources [6]. Most of the incentives are short-term. After adopting the strategic design framework of traditional enterprises, they find out that it largely do not match their own development strategies. For example, on the one hand, some technology companies wrote maximizing employees' long-term benefits in the program as a strategic goal who have already become shareholders. While, on the other hand, they place too much emphasis on short-term incentives. Apparently, their understanding of how long-term interest maximization plays an incentive role is misplaced.

### **2.2.2. Insufficient System Design**

There are different types of technical talents needed for artificial intelligence companies. For example, there are differences in the demand from young technical talents and middle-aged and older talents. Young scientific and technological talents value the working environment, conditions of scientific research, the stability of posts, the space for promotion and welfare, etc., while the older pay more attention to the recognition of the state and society [7]. The current incentive mechanism for scientific and technological talents does not take the different needs of different types of talents into account. It adopts the same measures for all talented people so that the greatest role of incentives cannot be effectively played. The current incentive content is still dominated by the traditional mode of "salary + bonus", and it is relatively single. It is easy for the incentive person to fail to meet their expected demand and slack off.

### **2.2.3. Relatively Low Motivation**

Liu Songbo (2014) studied the human resources management system of China's scientific and technological talents based on 1879 questionnaires in Beijing. From the development mechanism, about 40% of scientific and technological talents believe that organizations do not pay enough attention to them, and nearly 39% are not satisfied with their posts [8]. From these data, it can be seen that the degree of concern for the talents from enterprises is still not enough. It is reflected in the lack of incentives and the talent demand has not been met. In addition, human capital is not given sufficient attention in the implementation of science and technology talent incentive. Human capital owners and material capital owners have unequal status in the segmentation of capital gains.

## **3. Improve the Talent Incentive Mechanism**

### **3.1. The Need for Government Policy Support**

#### **3.1.1. Give Play to the Government's Service Function**

Our country is directly changing from the past government's intervening management model to a new type of administrative system under the concept of limited government [9]. The talent management model has also undergone changes. If the government wants to let most high-tech enterprises such as artificial intelligence gradually come out from the traditional talent management mode, they should actively become the company's "leader". They should guide enterprises to adapt to the law of market development, better improve their own talent incentive mechanism, and maximize talent effectiveness. The government's human resources department must pay attention to its main function, which is to guide enterprises, to motivate the elements and resources in the market when establishing talent incentive new order. So, the business entities can solve problems in fair competition. In addition, the government should also strengthen the planning of the talent incentive system. For example, make formulation of macroeconomic policies for talent incentives retain appropriate flexibility; when the needs of the market for employing people and talents change, there is room for adjustment of policies; maintain the value of talents exchange in an all-round manner. Whether the value of human talent can be exchanged in a fair manner requires a sound institutional guarantee. The government should be the guardian of terms, rules, and fair exchanges. They should try their best to establish a better, broader maintenance and coordination mechanism where the law may not reach.

#### **3.1.2. Increase Government Investment**

In addition to support policies, the government can give tax incentives for artificial intelligence and other high-tech enterprise talents to reduce the burden on enterprises. The direct investment of government funds in talents not only helps attract talents in the region, but also effectively promotes the diversification and innovative development of high-tech industries. For example, Shenzhen Municipality issued "a Number of Measures to Promote the Priority Development of

Qualified Personnel” in 2016, which provided numerous measures to reform the incentive mechanism for talented people and mobilize the enthusiasm of their innovation. One of the main measures is “double-creating funds” support. The contents of this measure include: promoting the development of “maker”, supporting the construction of a maker practice room, and granting up to one million yuan in funding in accordance with the conditions; implementing the maker training project funding plan, and providing up to one million yuan in grants for qualifying individuals and maker team projects [10]. The government directly injects funds into human resources. On the one hand, it supports the research and development of entrepreneurs in public institutions, enable talents to display their talents more effectively, free them from the constraints of management and mobility barriers. On the other hand, it can inject new vitality into the high-tech industry and promote the development of artificial intelligence.

## **3.2. Improvement of Enterprise Talent Incentive Mechanism**

### **3.2.1. Vigorously Promote the Property Rights Incentive Program**

Property rights incentive is a special form of incentive which is the combination of material incentive forms and management organizational forms. It is a special incentive measure for the employees with innovative value [11]. In the field of science and technology R&D, the value and motility of knowledge are particularly important. To mobilize the subjective initiative of innovative R&D personnel, property rights incentives are very effective measures. Since the major capital of talent is technology, companies can use technical elements as a condition of equity to incentivize talents, and give detailed levels of technology. Different levels correspond to different equity conditions to ensure fairness. For example, ZTE Corporation has drafted a plan for equity incentive plans in order to build a stronger research and development echelon. In 2014, the number of equity incentives was 1528. Senior management and core talents accounted for about 30% of the total shares. Effective property rights incentives can mobilize the enthusiasm of talents and are an indispensable incentive for the development of artificial intelligence companies.

### **3.2.2. Design More Personalized Salary System**

In order to realize the long-term development of artificial intelligence, based on the four-dimensional theory of compensation [12] (Jian Ping 2006), we will add the compensation strategy dimension, which is linked to the corporate strategy and consistent with the company’s strategic goals. Define the dimension elements of the science and technology talent remuneration system as five aspects, including salary strategy, salary level, salary structure, payroll method and payment strategy. The related research found that the salary level and payroll method have the strongest influence on the incentive effect [13]. Design must be more personalized because talents are heterogeneous in terms of human capital, and the needs of them at different stages are different. Personalized pay systems also need to be linked to psychology. We must pay attention to the coexistence

of material incentives and spiritual incentives, the integration of short-term incentives and long-term incentive, and the proportional distribution of fixed wages and performance wages. Only in this way does the compensation system have dynamic tunability and not deviate from the basic standards.

### **3.2.3. Strengthen Corporate Culture Construction**

Corporate culture can be composed of three levels: deep spiritual culture, middle-level institutional culture, and external material culture [14]. For artificial intelligence companies, property rights incentive and compensation system construction can be attributed to the corporate culture of the outer and middle layers. If companies want to unite the hearts of all talented people, motivate talents to make every effort for the development of the company, the in-depth spirit to corporate culture construction is particularly important. The construction of spiritual culture is to create a mode of heart management. The Confucianism's cautiousness and independence is the manifestations of the state of heart management. Wang Yangming's study of mind and the Zen's insight are the expressions of the philosophy of the heart. These excellent traditional cultures can be used as a reference for companies. Ancient Chinese business gangs relied on traditional culture to transform and satisfy the psychological appeal of talented people, enabling them to be loyal to the organization from the heart. Therefore, a strong corporate culture is like an invisible hand, which promotes the core team of the enterprise and enhances the cultural construction of the enterprise. We must integrate the humanistic spirit of freedom, equality, and fraternity into all aspects of the enterprise, so that the employees can form values that advance with the company.

## **4. Summary**

This article, mainly through the research of artificial intelligence industry, discovers the importance of artificial intelligence to the development of our country and the significance of core R&D talents to the development of artificial intelligence industry. It concludes the problem of the existence of talent incentive mechanism, and proposes effective countermeasures against the problem. Its innovation lies in the fact that the research area, artificial intelligence industry, belonging to the most advanced industry sector in the country and even the world. There is currently little literature research relating to the study of artificial intelligence industry's talent incentive mechanism. The inadequacy lies in the lack of data analysis to the status quo of the industry's talent incentive mechanism, which makes the article not rigorous and objective.

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## References

- [1] Xi, J.P. (2014) Xi Jinping: Speech at the Seventeenth Academician Meeting of the Chinese Academy of Sciences and the Twelfth Academician Conference of the Chinese Academy of Engineering. Chinese Communist Party News. <http://cpc.people.com.cn/n/2014/0610/c64094-25125594.html>
- [2] State Council (2017) Notice of the State Council on Printing a New Generation of Artificial Intelligence Development Plan. Central People's Government of the People's Republic of China. [http://www.gov.cn/zhengce/content/2017-07/20/content\\_5211996.htm](http://www.gov.cn/zhengce/content/2017-07/20/content_5211996.htm)
- [3] Hao, S.Q. (2018) Reasons of Enterprise Brain Drain and Countermeasures. *China Journal of Commerce*, **2**, 180-181.
- [4] Li, X.R., Zhou, L.M. and Jiang, Y.H. (2017) State-Owned Enterprises' Sci-Tech Talents Incentives and Countermeasures. *Special Zone Economy*, **8**, 104-106.
- [5] Peng, Y. (2014) Research on the Relationship of Collective Bargaining in Chinese Enterprises. Southwestern University of Finance and Economics.
- [6] Tian, E.Q. and Zhong, Y.Y. (2003) The Construction Strategy of Talent Incentive Mechanism in High-tech Enterprises in China. *Science & Technology Progress and Policy*, **1**, 114-116.
- [7] Liu, H.Y. (2015) Evaluation of the Effectiveness of Scientific and Technological Talents Incentive Policies. *China Opening Journal*, **4**, 106-109.
- [8] Hu, W. and Liu, S.B. (2014) Research on Human Resources Management System of Science and Technology Talents in China—An Empirical Analysis Based on 1879 Questionnaires in Beijing. *Science & Technology Progress and Policy*, **7**, 136-141.
- [9] Yu, Q.S. (2003) Deep Thinking on Talent Incentive Mechanism—Concurrently Discussing the Overall Construction of the Talent Incentive Mechanism in Underdeveloped Regions. *Changbai Journal*, **5**, 23-27.
- [10] Yang, L.P. (2016) Provide Double-Creating Funds to Support and Improve Talent Incentives. Press Center. <http://news.sina.com.cn/o/2016-04-11/doc-ixrcizu3934285.shtml>
- [11] Li, W.W. (2013) The Construction of Incentive Mechanism for Enterprise Innovative Talents. *On Economic Problems*, **8**, 41-43+91.
- [12] Gu, J.P. (2006) Strategic Compensation. Nanjing University Press, Nanjing, 188-190.
- [13] Zhang, Y.C. and Wang, Y.C. (2012) Research on the Relationship between Salary System and Incentive Effect of Science and Technology Innovation Talents. *Science & Technology Progress and Policy*, **1**, 152-155.
- [14] Qiang, Q. (2017) Problems and Countermeasures to be Solved Urgently in the Construction of Corporate Culture in China. *Shandong Social Sciences*, **1**, 141-144.