Intelligent Learning Approaches for Addressing Problems and Implementing Countermeasures in the Development of the Health Care Industry under the Big Data Landscape

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Abstract. With the improvement of living standards, health care has become an important part of people's life. Health care is defined as the maintenance of human life through healthy natural products and elements based on natural scenery. "Health" is the ultimate goal that people pursue, and "nourishing" is the means that people take to achieve the goal of health. The health care industry is the sum of health care products and services, as well as the personnel organizations that provide these services and products, and is the result of the combination of multiple departments and industries. But now, there are certain problems in the development of my country's health care industry. For example, the development of the health care industry is highly dependent on the distribution of natural resources, the government support is not strong, there is no implementation, the market scale continues to expand, and the effective supply is seriously insufficient. But in the final analysis, these reasons are due to the insufficient level of informationization of enterprises. In order to solve these problems, the team built a health care industry informatization development model based on big data technology. Improve the efficiency of information processing in the animal husbandry industry to expand its industrial scale.

Keywords: Big data; Healthcare industry; Development issues; Countermeasures; Intelligent Learning Approaches
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1 INTRODUCTION

The term "health care" first appeared from the perspective of the elderly, and "health care" is described as three levels. One is physical and mental health, which refers to being in a good state both physically and mentally. The second is to preserve life. It preserves human life from both

physical and spiritual perspectives. The main objects of conservation are the elderly and sub-healthy people who lack the ability to live independently. However, with the continuous development of social science, the term health care has also been expanded into a new meaning. Health care is defined as the maintenance of human life through healthy natural products and elements based on natural scenery [7-10]. In modern society, health care is considered as a social activity. It is no longer limited to the elderly, nor is it limited to specific situations where care must be carried out. Anyone can carry out health care activities at any time. The specific operation mode of the health care industry is shown in Figure 1, which is divided into three layers, the support layer, the core layer, and the compact layer [26-8].

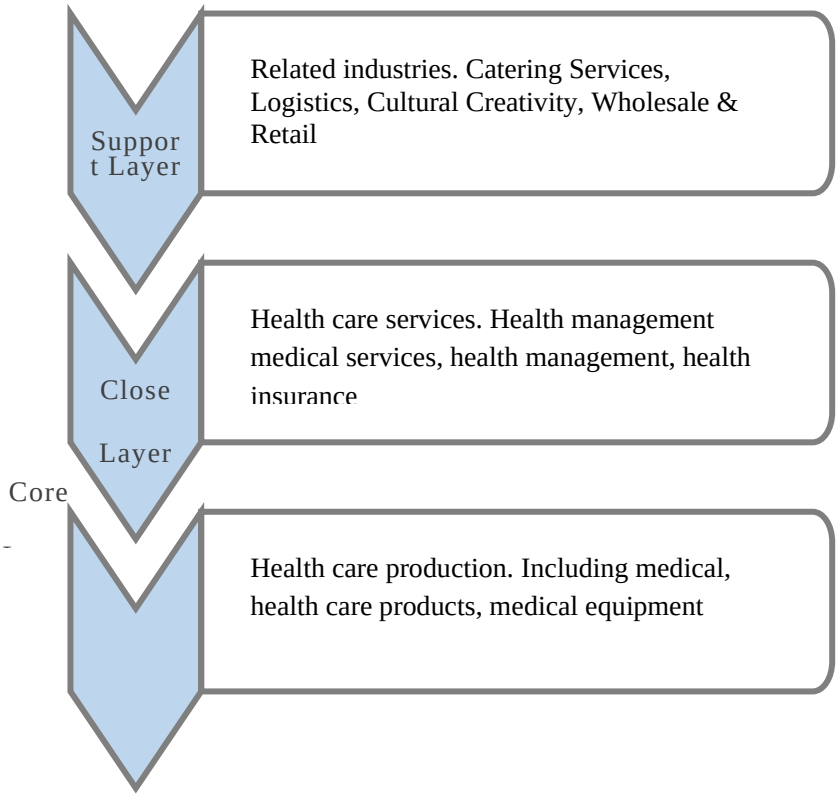

Figure 1: Operation Mode of the Health Care Industry.

The health care industry is the sum of health care products and services, as well as the personnel organizations that provide these services and products, and is the result of the combination of multiple departments and industries. The health care industry is an industry that provides products and services for people, and is always centered on people. According to the length of human life, the health care industry can be divided into the health care industry for infants, the health care industry for young people, and the health care industry for the elderly.

The health care industry is highly dependent on the supply of natural resources. We can divide the health care industry into three layers, which are the support layer, compact layer, and core layer. The supply of natural resources is in the support layer of the health care industry, and the tight layer is the services provided by the health care industry. Core urban health care products manufacturing. Natural resources are at the supporting level, which to some extent shows that the

supply of natural resources determines the development of the health care industry [16-23]. On the other hand, the health care industry is also highly dependent on the regional environment. Similar to the tourism industry, the health care industry is highly dependent on the superior geographical location. Figure 2 shows the hierarchical structure of the healthcare industry.

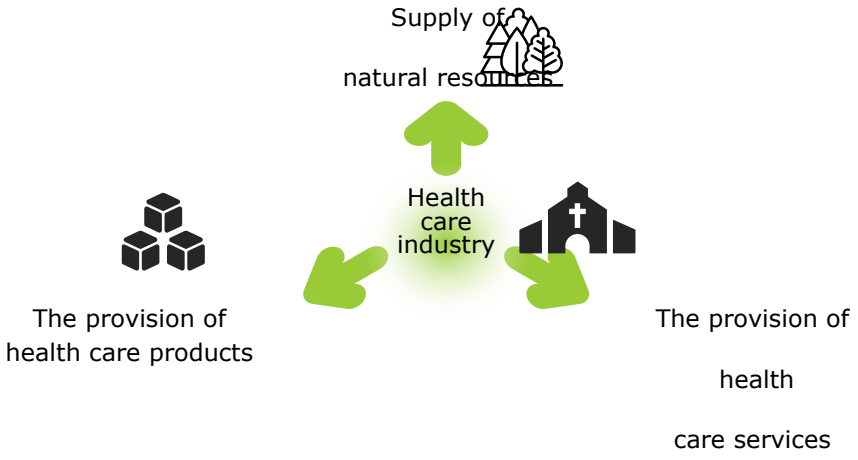

Figure 2: Hierarchy of the Healthcare Industry.

The health care needs of users are more intelligent, diversified, personalized, and informatized. Building a smart health care model has become an inevitable trend in the development of the health care industry. Big data can integrate information resources with natural resources and human resources, build a smart health care system, use the advantages of big data technology in data collection, data collation, data analysis and utilization, combine health care development and information technology, and promote Informatization transformation of health care industry. Big data technology has great advantages in information processing. The use of big data technology can promote the development of the health care industry, help build a smart health care model, and play a role in improving the informatization level of the health care industry and promoting the healthy development of the health care industry. Great effect. [9-19] It is necessary to promote the informatization development of the healthcare industry, and its model diagram is shown in Figure 3.

The previous research has systematically summarized the current situation of the development of the health care industry. The research in this paper is based on the predecessors. It aims to investigate the problems existing in the health care industry and promote the informatization development of the health care industry through big data technology [27-5].

2 PROBLEMS IN THE HEALTH CARE INDUSTRY

After a simple investigation, the team found that there are four development directions in the health care industry as shown in Table 1. These four development modes are all limited by the internal development environment and external conditions.

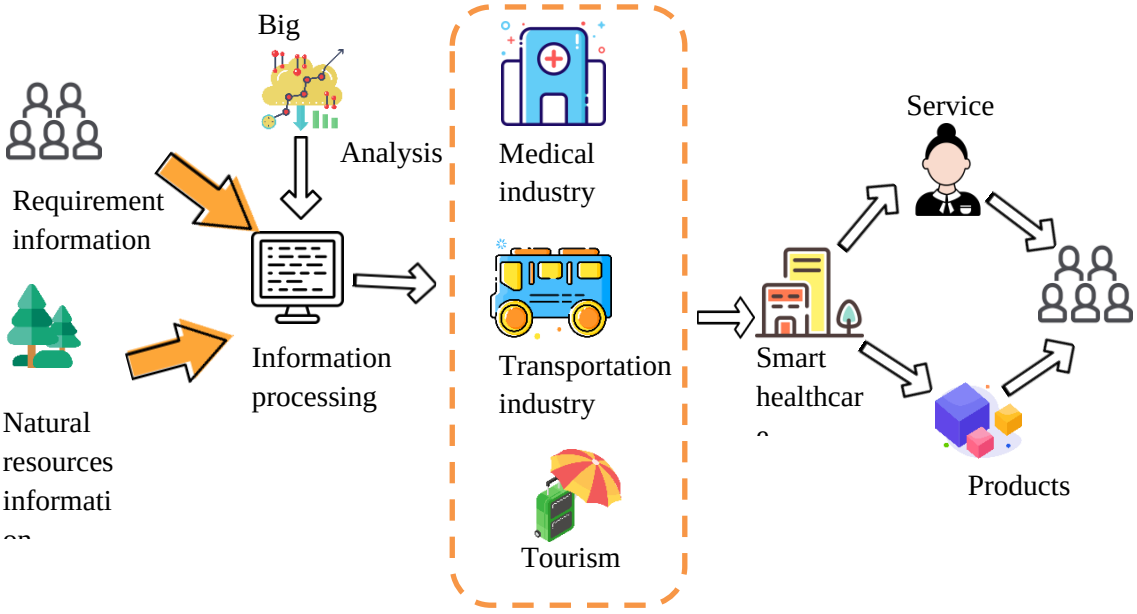

Figure 3: The Informatization Development Model of the Healthcare Industry.

Type	*Proportion*
Pension Industry	*36%*
Medical industry	*24%*
Characteristic town	*12%*
Industrial Park	*28%*

Table 1: Four Directions for the Development of the Health Care Industry.

2.1 The Development of Health Care Industry is Highly Dependent on the Distribution of Natural Resources

After investigation and research, the team found that the development of the health care industry is geographically uneven. The health care industry is an industry based on natural resources. It provides people with healthy maintenance means by virtue of natural resources, thereby promoting the development of the health care industry itself. The development of the health care industry is closely related to natural resources, climate and natural conditions. However, my country's natural resources are unevenly distributed in space, and there are differences in climate between the north and the south and the east and the west. Big difference [1-11].

2.2 Government Support is Weak and Lack of Implementation

In recent years, although the state has issued a number of policies to promote the development of the health care industry and provided great support in terms of policies, there are many difficulties in the specific implementation of these policies. The supply of land for the development of health

care enterprises, the provision of financial subsidies for the development of health care enterprises, and the reduction or exemption of taxes for health care enterprises are the three beneficial tools for the government to support the development of health care enterprises. However, when these national-level policies are implemented at the local level, there is a lack of appropriate supporting mechanisms, which makes it difficult to implement the policies. Table 2 shows the methods and proportions of government support for health care enterprises [22-24].

Type	Proportion
Land supply	0.3
Financial aid	0.56
Tax deduction	0.14

Table 2: The Methods and Proportions of Government Support for Health Care Enterprises.

2.3 The Market Scale Continues to Expand, and the Effective Supply is Seriously Insufficient

The target customers of health care enterprises are the elderly and sub-healthy people. With the aging of the population, the market size of the health care industry is expanding. According to incomplete statistics, by the end of 2022, the consumption demand of China's elderly health care industry will be more than 7 trillion yuan, but the effective supply of the elderly health care market will only be 500-700 billion yuan. In the medical field, according to the data released by the state, there are only 322 rehabilitation specialized hospitals in China, most of which are located in urban areas, which means that there is no rehabilitation specialized hospitals in most cities in China [28-12].

3 USE BIG DATA TO SOLVE PROBLEMS IN THE HEALTHCARE INDUSTRY

3.1 Model Analysis

Through the above analysis, we can conclude that the existing problems in the development of the health care industry include uneven distribution of natural resources, low government support, and insufficient market supply. The root cause is the insufficient informatization level of the health care industry. The health care industry has good development prospects and basic conditions for development. These problems arise due to the lack of a reasonable industrial model and information management. As a result, there are data islands and a large amount of fragmented data that are difficult to handle within the enterprise, making it impossible to optimize resources and upgrade configurations. In order to solve these problems, we must establish a model for the informatization development of health care enterprises. By optimizing the processing procedures of various parts of the enterprise, we can improve the efficiency of data processing, establish a smart health care model, and promote the effective expansion of the health care market. Effective allocation of resources, among which the smart health care model is shown in Figure 4 [25-14].

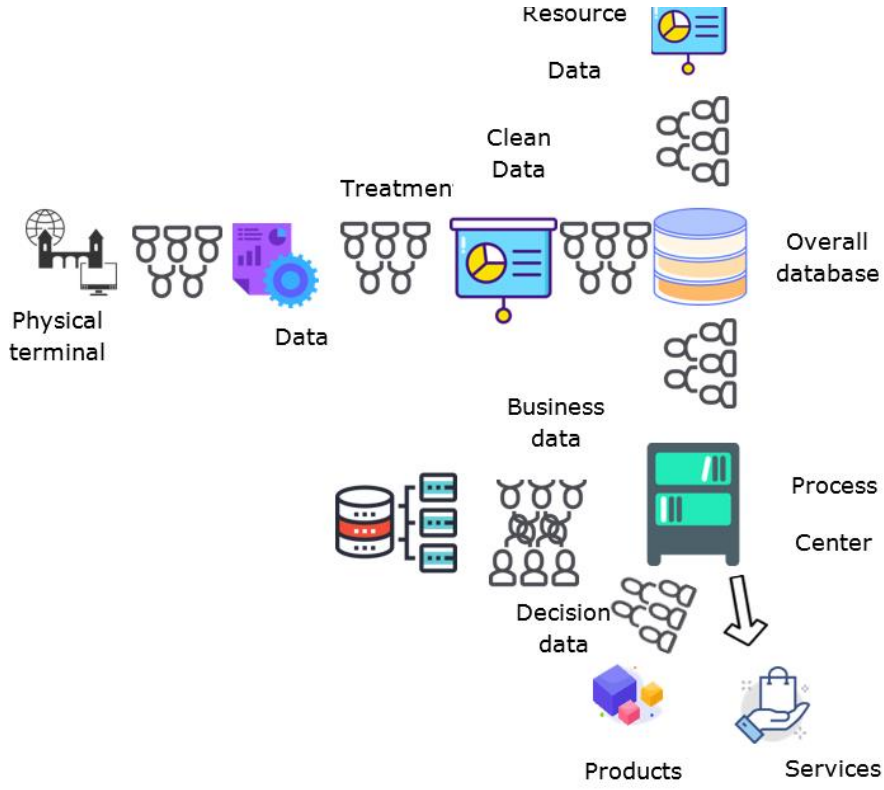

Figure 4: Smart Health Care Model.

3.2 Model Representation

Big data technology stores and analyzes massive data, analyzes and predicts, and plays an important role in the process of building a smart healthcare industry. The use of big data to realize the smart health care industry must promote the management informationization of health care enterprises. Using physical facilities such as sensors to collect data. The specific formula used is shown in Formula (1), which x_i represents each information attribute and y_i represents the processing process of information. $w^T \cdot \Phi(x_i) + b$ is to standardize the data [20-3].

$$\frac{y_i \cdot y(x_i)}{\| w\|} = \frac{y_i \cdot \left(w^T \cdot \Phi(x_i) + b\right)}{\| w\|}$$

Formula (2) is to unify the data between subsystems on the original data obtained from information collection.

$$a^* = \arg\max_{\alpha} \left(\sum_{i=1}^{n} \alpha_i - \frac{1}{2} \sum_{i,j=1}^{n} \alpha_i \alpha_j y_i y_j \Phi^T(x_i) \Phi(x_j) \right)$$

After preprocessing the data, it is necessary to integrate the dimensions of the data. The formula used for data integration is shown in Formula (3), m represents multiple dimensions, and i represents the order of the data.

$$X^{(m)}(k)=\sum_{l=1}^{k}X^{(m-1)}(i)$$

Due to the complexity of the data of health care enterprises, in order to realize the informatization of the enterprise with the help of big data technology, it is necessary to mine the association rules between the data, where Formula (4) is the preprocessing of mining the association rules of the information of each department, and determine the department or sub-group for the next step. Association rules between systems provide raw data.

$$\eta(k)=\frac{\min\min\left|\hat{X}^{(0)}(\mathrm{k})-X^{(0)}(\mathrm{k})\right|+\lambda\max\max\left|\hat{X}^{(0)}(\mathrm{k})-X^{(0)}(\mathrm{k})\right|}{X^{\wedge(0)}(\mathrm{k})-X^{(0)}(\mathrm{k})|+\lambda\max\max|\hat{X}^{(0)}(\mathrm{k})-X^{(0)}(\mathrm{k})|}$$

Formulas (5)-(7) are mainly used to mine the correlation of inter-departmental data Formula (6) and Formula (7) are also generally used to mine the strong association rules of two itemsets, while Formula (5) is mainly responsible for splitting some complex data into simple itemsets [21-15].

$$\sup(R_{jk})=\left(\sum_{i=1}^{n}p_{ijk}\right)/n$$

$$\sup(C\Rightarrow F)=\sup(C\wedge F)=\left(\sum_{i=1}^{n}\min(d_{iC},d_{iF})\right)/n$$

$$conf(C\Rightarrow F)=\sup(C\Rightarrow F)/\sup(C)$$

There are many links in health care enterprises. How to break the information islands and coordinate the information communication between various parts in the operation is an important issue. Breaking down information silos necessitates the elimination of sensitive information collections for individual pieces of information. Let the collection of desensitized information share information. Formula (8) is to construct a sensitive information set. Then the sensitive information set is shown in Formula (9).

$$f_1(\mathrm{Data})=\sum_{C_j\in c}\left(\sum_{d_i\in D_j}\left(\mathrm{Set}_{\mathrm{Re\,dCultrue}}-R\right)-UD_{K_i\in E_j}\left\{\mathrm{Data}_{i,j}\right\}\right)$$

$$g(data)=D(data)-f(data)$$

After the set of desensitized information is determined, the information exchange function of each department can be performed. The data exchange is shown in the Formula (10). If Formula (10) is satisfied, the exchange is performed, otherwise, no exchange is performed.

$$SQL^{a}_{\substack{\mathrm{Culture\text{-}spread\text{-}time}\\ c}}=\max\left\{B_{\mathrm{culture},j},B-N\mathrm{um}\right\}$$

After the above steps, we can initially build a model that can break the island of health care data. In order to promote the allocation of natural resources in health care enterprises. On the basis of this model, we have added the step of dividing the natural resources of health care enterprises through big data technology, and the specific formulas are shown in Formulas (11)-(12).

$$\prod_{E_i\in X}\left(HealthyCare^{b}_{\mathrm{c}}-\mathrm{DataSet}^{a}_{\mathrm{b}}\right)$$

$$f_2(\text{DataSet}) = \sum_{s_j \in S} \sum_{d_i \in D_j} \left(HealthyCare_{i,j} \right) + \beta \sum_{d_i \in D} \left(U_i^b - U_i^a \right)$$

3.3 Model Evaluation

The purpose of this model is to use big data technology to break through the optimal allocation of data resources in the health care industry in all links of the health care industry, improve the efficiency of information processing in the health care industry, and expand its industrial scale. The model constructed this time uses big data technology to solve the information sharing problem of each subsystem of the health care enterprise through the optimization of the information processing process. In order to evaluate this model objectively and accurately, we use artificial neural network algorithm to evaluate the effectiveness of this model. The model evaluated by the artificial neural network is shown in Figure 5 [29-13].

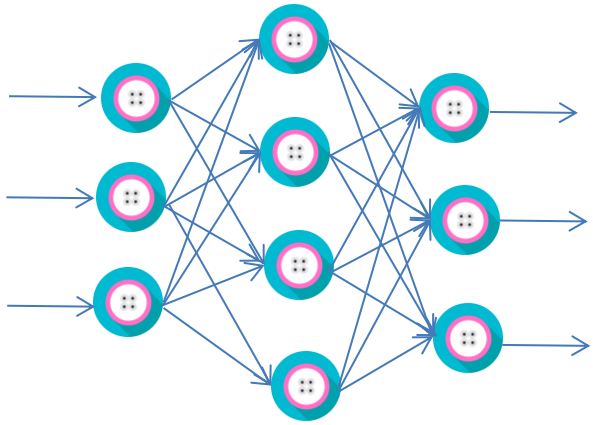

Figure 5: Artificial Neural Network Evaluation Model.

As shown in Table 3, using the artificial neural network for evaluation, the prediction accuracy rate is as high as 91.28% [16-4].

Project	Value
Prediction accuracy	91.28%
Outlier effect	1 2.3%
Concentration	8 8.12%
Degree of reliability	7 9.8%

Table 3: Evaluation Results of Artificial Neural Network.

3.4 Model Validation

In order to ensure the usability of the model built in this research, we have reached a cooperation with a company to let them adopt the model built by the team. This company was founded in 2017 and is now on the verge of bankruptcy. The team has reached a cooperation with the company leaders and used the model we built to organize all aspects of the work. The experiment period is from 2021 to 2022. During this year, the team can monitor the various business operations of the enterprise. The specific status of business operation is shown in Figure 6.

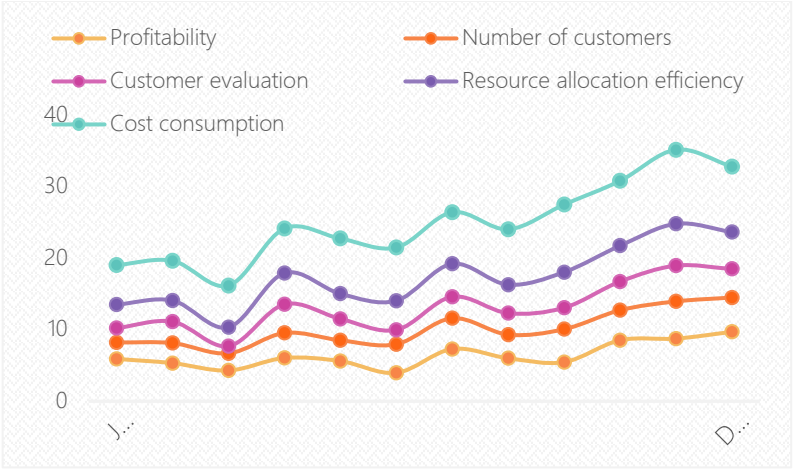

Figure 6: The Profitability of Various Indicators of the Enterprise.

We count the company's operations on a monthly basis. The statistical indicators include five indicators: profit, number of customers, customer evaluation, resource allocation efficiency, and cost consumption. It can be seen from Figure 6 that during the 12 months from January 2021 to January 2022, the company has changed from a loss to a profit, the number of customers has gradually increased, and customer satisfaction has also gradually improved. The efficiency of resource allocation ranks among the top three. The month stays the same, but slowly rises in the back. Costs are reduced month by month. From the above results, it can be seen that the company's model constructed in this study has a certain effect and solves the development problem of the enterprise.

3.5 Model Significance

The dilemma faced by the development of the health care industry lies in the uneven distribution of natural resources, the difficulty in implementing government policies, and the lack of effective supply. The root cause of these problems lies in the insufficient informatization level of health care enterprises, which makes it difficult to break the problem of data islands, resulting in low efficiency in the internal operation of enterprises.

4 COUNTERMEASURES FOR THE DEVELOPMENT OF HEALTH CARE INDUSTRY

4.1 Promote the Implementation of Policies and Regulations Through Big Data Technology

Government policies and regulations are of guiding significance to the development of central industries. The government's guidance is carried out from a macro perspective, and the implementation of health care enterprises is carried out from a practical perspective. To achieve the transformation from theory to practice, business leaders need to combine the status quo of the company and comprehend the connotation of government policies and regulations to clarify the development direction, organizational goals, core advantages, resource acquisition and other elements of the health care industry. Big data technology can store and analyze massive data, and is an important tool for enterprises to conduct information analysis. Enterprises can use big data technology to quickly and accurately analyze the relevant data of the enterprise, discover the knowledge and connotation contained in these data, combine the corresponding domain knowledge,

and finally help enterprise leaders determine the development direction, organizational goals, core advantages, etc. Of the enterprise.

4.2 Develop Corresponding Evaluation Indicators Through Big Data Technology

The health care industry involves multiple links, including the acquisition of health care resources, the provision of health care products, health care services, and health care management. The development of the health care industry involves an industrial chain from resource acquisition to service provision. There are many links involved in the industrial chain, and there are many details and requirements involved. One of the reasons why the health care industry market cannot expand is the lack of unified evaluation indicators. Through big data technology, the business data of the health care industry is analyzed, and the business personnel combine relevant knowledge to formulate a complete set of objective health care industry evaluation indicators to promote the standardized and standardized development of the health care industry.

4.3 Stimulate the Vitality of the Health Care Industry and Expand the Effective Supply of the Market

The health care industry involves many industries such as culture, medical care, tourism, and the environment. In order to effectively expand the supply of the health care market, we must stimulate the vitality of various industrial entities and attract the participation of multiple entities such as governments at all levels, society, and enterprises. In order to build a health care industry that can provide rich health care services and product supply, diversified choices, high-quality products and services, and continuously develop industrial innovation, so as to realize the allocation of resources and complement each other's advantages among enterprises, and promote health care. The overall development of the animal husbandry industry [17-6].

4.4 Encourage Talent Development and Expand Innovation Space

The development of the health care industry must increase the cultivation of talents, build a comprehensive team of excellent talents, tap the potential of talents, and provide better and more professional services for the health care industry. Encourage talents to innovate and expand the innovation space of enterprises. Promote the integrated development of enterprises, starting from the form of health care, the needs of users, and the core advantages of competition. Health care depends heavily on the supply of natural resources. Enterprises can build their core advantages and brand effects according to different types of natural resources and the geographical location of resources. For example, enterprises can combine health care with culture, and construct many influential and innovative health care development directions such as traditional Chinese medicine health care and diet health care [2-30].

5 CONCLUSION

The health care industry is the sum of health care products and services, as well as the personnel organizations that provide these services and products, and is the result of the combination of multiple departments and industries. But now, there are certain problems in the development of my country's health care industry. For example, the development of the health care industry is highly dependent on the distribution of natural resources, the government support is not strong, there is no implementation, the market scale continues to expand, and the effective supply is seriously insufficient. But in the final analysis, these reasons are due to the insufficient level of informationization of enterprises. In order to solve these problems, the team built a health care industry informatization development model based on big data technology. Improve the efficiency of information processing in the animal husbandry industry to expand its industrial scale. The model

constructed this time uses big data technology to solve the information sharing problem of each subsystem of the health care enterprise through the optimization of the information processing process. Finally, based on the research content of the article, suggestions for the development of health care enterprises are put forward (1) to promote the implementation of policies and regulations through big data technology (2) to formulate corresponding evaluation indicators through big data technology (3) to stimulate the vitality of the health care industry and expand the effective market Supply (4) Encourage talent development and expand innovation space.intelligent learning can support healthcare enterprises in optimizing resource allocation and improving operational efficiency. Through data analytics and predictive modeling, healthcare organizations can gain insights into patient needs, resource utilization patterns, and workflow optimization opportunities. This information can guide decision-making processes, enabling better allocation of healthcare resources, such as medical equipment, staff, and facilities. Intelligent learning can also assist in streamlining administrative processes, optimizing appointment scheduling, and reducing waiting times, thereby enhancing the overall patient experience and satisfaction.

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