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A multi-level Statistical Study on the Financial Supply and Demand Structure of Science and Innovation Enterprises: A case study of Hefei Science and Innovation Financial Reform Pilot Zone

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Abstract: The proposal of the strategy of strengthening science and technology gives new momentum to the development of science and innovation enterprises. Based on the background of the establishment of the "Science and innovation financial Reform pilot Zone" in the Yangtze River Delta, this paper analyzes the influencing factors of the financial supply and demand structure of science and innovation enterprises, and predicts its development. Firstly, this paper studies the factors that may affect the financial supply and demand of science and technology innovation enterprises, and analyzes the correlation between the influencing factors and the financial supply and demand structure of science and technology innovation enterprises through typical correlation analysis, cluster analysis and entropy weight method. Secondly, BP neural network predicts the development of scientific and technological enterprises in 2022-2030. Finally, build a comprehensive evaluation system, and put forward relevant suggestions for the future development of Hefei science and technology innovation enterprises. The results show that: (1) The number of patents has the most influence on the development of enterprises, followed by the registered capital of enterprises, and the intellectual property strength and time to enter the market have less influence. (2) The number of enterprise brand projects, the amount of financing, and the value of investment and development have a positive impact on the development of enterprises. (3) From 2022 to 2030, the research and experimental development funds of Hefei science and technology innovation enterprises will steadily increase, and the development prospect is good. This project aims to provide valuable suggestions and countermeasures for the development of science and technology enterprises.

Keywords: Scientific and technological innovation enterprise, Canonical correlation analysis, Cluster analysis, BP neural network, Powerful country in science and technology.

1. Introduction

The "four focus" strategy of serving science and technology power has given new momentum to the development of science and technology enterprises, and accelerating the pace of science and technology self-reliance and the construction of science and technology power is an important focus of China's construction of a new development pattern. The development of science and technology innovation finance is the need to serve the strategy of supporting science and technology power. The national "14th Five-Year Plan" and the long-term goals of 2035 propose that we should adhere to innovation-driven development, shape new advantages in development in an all-round way, and take science and technology self-reliance as the strategic support for national development [1].

In November 2022, the People's Bank of China, the National Development and Reform Commission, the Ministry of Science and Technology, the Ministry of Industry and Information Technology, the Ministry of Finance, the Banking and Insurance Regulatory Commission, the Securities Regulatory Commission and the Administration of Foreign Exchange jointly issued the Overall Plan for the Construction of Science and Innovation Financial Reform Pilot Zones in Shanghai, Nanjing, Hangzhou, Hefei and Jiaxing. The plan proposes to build Shanghai, Nanjing, Hangzhou, Hefei and Jiaxing pilot zones for innovation and finance reform into demonstration zones for innovation and finance cooperation, product and business innovation clusters, pilot zones for reform policies, model zones for financial ecological construction, and leading areas for in-depth integration of industry and city in about five years. In this opportunity, Hefei science and technology enterprises ushered in new opportunities and challenges. Financial supply refers to the financial products or services provided by various financial institutions and markets for the main body of demand. Demand structure refers to the distribution ratio of the total effective purchasing power of the society in various industries. In this regard, the financial supply and demand structure of science and technology enterprises will greatly affect the development of enterprises, and it is necessary to make timely adjustments and changes according to the requirements of the market and policies. Therefore, it is of great significance to analyze the relevant influencing factors of the financial supply and demand structure of science and technology innovation enterprises and put forward corresponding suggestions.

However, due to the impact of the epidemic and the characteristics of high investment, high competition and high risk of science and technology innovation enterprises, the development of science and technology innovation enterprises is difficult. New enterprises decreased significantly, taking Hangzhou Future Science and Technology City as an example: its new enterprises mainly concentrated after the G20 Summit, and the actual data show that by the end of 2018, the survival of less than 1 year of enterprises as many as 908, accounting for 5.42% of the total

number of enterprises. At the same time, the Future Science and Technology City issued a total of 410.14 million yuan of innovation vouchers, and 666 cashing enterprises accounted for less than 3.98% of the total enterprises [2]. Therefore, the survival of science and technology enterprises has been severely challenged, and some current measures can not well solve the problems of capital and technology of science and technology enterprises. Further, the lack of correct adjustment of the supply and demand of science and technology innovation enterprises has affected the overall prosperity process of China's science and technology innovation.

There are many factors affecting the financial supply and demand structure of scientific and technological enterprises, such as government funding, bond financing, equity financing, scientific and technological financial products, private capital, corporate credit and other factors. These factors have complex mechanisms and mutual influence, involving all aspects of scientific and technological enterprises. In summary, under the background of the deployment of the strategy of strengthening science and technology, this project takes Hefei Science and Innovation financial Reform Pilot Zone as an example to study the factors affecting the financial supply and demand structure of science and innovation enterprises, and puts forward suggestions for improvement. In order to improve the survival rate of science and innovation enterprises, promote the further development of science and innovation enterprises, and realize the science and innovation of enterprises as soon as possible.

For the development of science and technology enterprises, other countries have achieved better development. Take the United States as an example. Since the 20th century, its economic growth, driven by manpower and capital, has gradually changed to the improvement of total factor productivity brought about by scientific and technological progress, and the innovation ability of enterprises has been greatly improved. At the same time, American science and innovation enterprises developed earlier, and many measures for the development of science and innovation enterprises were proposed: for example, Nasdaq, as the main listing platform for American science and innovation enterprises, provides effective direct financing channels for high-tech enterprises and provides important support for the rapid growth of American science and technology enterprises [3].

The life cycle of science and technology enterprises can be roughly divided into four stages: initial stage, growth stage, maturity stage and decline stage, and the financing characteristics of the four stages are not the same. The enterprises in the first two stages do not have good financial supply and are easy to go bankrupt. Although the development of China's science and technology enterprises is relatively late, but also made excellent progress. Take Zhejiang Province as an example. Zhejiang is a pioneer of reform and opening up, with a strong atmosphere of innovation and entrepreneurship. The financing methods of Zhejiang science and technology enterprises are mainly banking credit, venture capital fund equity financing or merger and acquisition financing. With today's policy support, the survival rate of science and innovation enterprises in Zhejiang Province has greatly improved. However, there are still some problems in the accessibility, realization and sustainability of financial services [4].

Science and innovation enterprises in the Yangtze River Delta developed early and have a good foundation, and Anhui is in the stage of accelerating industrialization and urbanization. Hefei, the capital city, has advantages in land and labor factors and has undertaken the transfer of related industries. With the deepening of cooperation in the Yangtze River Delta and the increase of investment in science and technology, science and innovation enterprises in Hefei have developed rapidly [5-6]. Since 2014, Hefei has repeatedly issued relevant policies to promote scientific and technological innovation and the combination of science and technology and finance. In 2016, Hefei Regional Science and Technology Financial Innovation Strategic Alliance was established to strengthen the connection between science and technology innovation enterprises and commercial banks and all kinds of capital. In April 2021, Anhui Province issued the Notice on Further Promoting the Banking Industry to Support scientific and Technological Innovation and Accelerate the Development of Strategic Emerging Industries, increasing support for the development of scientific and innovative enterprises in terms of R&D (research and experimental development) expenditure, finance and various financing channels [8].

At present, a new round of global information technology revolution is developing rapidly, and Hefei science and technology innovation enterprises have entered a new stage of high-quality development. In this context, technological innovation of enterprises has become the core factor to promote industrial upgrading, improve production efficiency and build a modern industrial system [9]. Under the background of the establishment of "Innovation and Finance Reform pilot Zone" in the Yangtze River Delta, it is of great theoretical and practical significance to study the factors affecting the financial supply and demand structure of science and technology innovation enterprises. In this regard, the research idea of this project is as follows: 10 representative scientific and technological innovation enterprises in Hefei are selected as research objects. First, the factors affecting the financial supply and demand structure of scientific and technological innovation enterprises in Hefei are analyzed quantitatively and qualitatily by combining systematic cluster analysis and entropy weight TOPSIS method. Secondly, a typical correlation analysis model is constructed to analyze the financial supply and structural demand of Hefei science and technology innovation enterprises. Finally, BP neural network is used to predict the future development of 10 science and technology innovation enterprises, and the comprehensive research results for the development of Hefei science and technology innovation enterprises are put forward valuable opinions.

2. Research Data Source

The research data in this paper are mainly from Ai enterprise website, Anhui Statistical Yearbook and Hefei Statistical Yearbook. Some of the data are from offline surveys. The prediction is partly due to the lack of relevant data of Hefei enterprises before 2000. The average proportion of other enterprise development data in the total fund from 2000 to 2021 is calculated as the calculation basis of the data before 2000, and then the enterprise development data from 1993 to 1999 is calculated for prediction.

3. Study Object Selection and Description

There are many factors affecting the financial supply and demand structure of scientific and creative enterprises, and

there are complex mechanism relationships among many factors, but which ones have practical research significance need to be deeply explored. In order to analyze the development status of science and technology innovation enterprises in Hefei, 10 representative science and technology innovation enterprises in Hefei are selected, and the specific descriptions are shown in Table 1.

Table 1. Research 10 Hefei city science and technology enterprises

Representative enterprise	Evaluation of enterprises
Hefei Guoxuan high-tech power energy Co., LTD	Mainly engaged in the independent research and development of new energy vehicle power lithium batteries
Hefei Zhaocore Electronics Co., LTD	Mainly engaged in the research and development of integrated circuits and systems
Hefei Zhongnan Optoelectronics Co., LTD	Mainly engaged in crystal silicon wafers, solar cells, photovoltaic power generation system research
Hengshuo Semiconductor Co., LTD	Main memory chip and MCU chip research and development
Huating Power Technology Co., LTD	Mainly engaged in electric vehicle power system research
Hefei Weitian Express Information Technology Co., LTD	It mainly conducts research on Internet of Things technology
Hefei Taihe intelligent Technology Group	Mainly engaged in intelligent robot design and industrial robot development
Hefei Jieshijie Material Co., LTD	Mainly engaged in engineering plastics and other new materials and their products, chemical machinery, automation control equipment development
Hefei Hezuo intelligent Manufacturing Co., LTD	Mainly engaged in forging equipment production, sales of enterprise work
Source Quantum Computing Technology Co., LTD	It is mainly engaged in the research and development, promotion and application of quantum computers

4. Analysis of Influencing Factors of Financial Supply and Demand Structure in Hefei Science and Technology Enterprises

4.1. Systematic Clustering Classifies the Types of Enterprises

4.1.1. Model Description and Selection

Systematic clustering is a common classification method, the idea is to start each sample as a class, and then the nearest sample (that is, the group with the smallest distance) is first clustered into small classes, and then the aggregated small classes are combined according to their inter-class distance, and continue to continue, and finally all the subclasses are aggregated into a big class. There are many kinds of classification in systematic clustering, among which the most commonly used method is the class average method. In this paper, the distance between groups is used as the distance of class average method, and the above enterprises are analyzed by clustering.

4.1.2. Model Description and Selection

In order to meet the needs of cluster analysis, this paper uses the number of patents, the number of external cooperation and the number of brand items of enterprises to construct the distance matrix of cluster analysis and establish the systematic cluster analysis model. Table 2 shows the final result of clustering.

Table 2. The final cluster center of system clustering

index	First kind	Second kind
Several patents	5794.0	571.0
Total financing	5.0	5.9
Number of foreign cooperation	45.0	11.6
Number of enterprise brand projects	2.0	1.2

According to the clustering results, the above 10 enterprises are divided into two categories:

(1) The first type of development advantage enterprises: Hefei Guoxuan high-tech Power Energy Co., LTD.;

(2) The second type of disadvantaged enterprises: Huating (Hefei) Power Technology Co., LTD., Benyuan Quantum Computing Technology (Hefei) Co., LTD., Hefei Jieshijie Materials Co., LTD., Hefei Zhaoxin Electronics Co., LTD., Hefei Weiten Express Information Technology Co., LTD., Hengshuo Semiconductor (Hefei) Co., LTD., Hefei Zhongnan Optoelectronics Co., LTD., Hefei Heduan can only Manufacture Co., LTD., Hefei Taihe Intelligent Technology Group.

Analysis: Advantage enterprises, according to the survey data show that the first type of enterprise Hefei Guoxuan high-tech Power Energy Co., Ltd. is the main scientific innovation product direction for scientific instruments, the number of patent projects is up to a total of 5794, the number of foreign cooperation is also the most in the 10 enterprises, from the establishment to now a total of 45 foreign cooperation, belongs to the early entry into the market enterprises. The main advantage of Hefei Guoxuan High-tech Power Energy Co., Ltd. is the early development, from 2006 began to enter the market, its rapid development, strong innovation ability, can actively communicate with foreign enterprises financing, therefore, established its own brand advantage.

Disadvantaged enterprises: The remaining enterprises are classified as similar enterprises, and these 9 enterprises have obvious disadvantages: Lack of scientific and technological innovation ability, Hefei Jieshijie Materials Co., Ltd. is the nine enterprises with the largest number of patents, a total of 1580 patents, less than half of Hefei Guoxuan high-tech Power Energy Co., LTD., and such enterprises have fewer foreign cooperation times, and weak brand advantages, such as Hefei Zhaocore Electronics Co., LTD., Hefei Taihe intelligent Technology Group fewer brands.

4.2. The Analysis of Enterprise Development Potential by Entropy Weight TOPSIS Method

4.2.1. Model Description

Entropy weight TOPSIS is a combination of entropy weight method and TOPSIS method, which can give full play to the advantages of the two methods. Its calculation is mainly divided into the following two parts: The first step of entropy

weight TOPSIS is to calculate the weight value using entropy weight method, and weight the data to obtain new data (the algorithm is automatically completed); The second step is to use the new data TOPSIS method, and finally complete the analysis. In this regard, this paper uses TOPSIS method of entropy weight to analyze the influence factors and future development potential of 10 representative enterprises.

4.2.2. Establishment and Analysis of the Model

First, the influence weights of the main influencing factors were calculated, and the calculation results were shown in Table 3:

Table 3. The influence factors of enterprise development are calculated and weighted

index	Information entropy	Information utility value	Weight coefficient
Major technology financial products	0.9445	0.0555	4.20%
Development potential	0.7409	0.2591	19.59%
Investment development value	0.5267	0.4733	35.78%
Scale development	0.8808	0.1192	9.02%
Number of foreign cooperation	0.8344	0.1656	12.52%
Number of enterprise brand projects	0.8070	0.1930	14.60%
Capital strength	0.9737	0.0263	1.99%
Intellectual property strength	0.9893	0.0107	0.81%
Time to market	0.9802	0.0198	1.50%

It can be seen from the calculation results in the table that the weight ratio of the number of patents on the impact of enterprise development is the largest 35.78%, and the number of patents greatly reflects the scientific and creative ability of enterprises, which is consistent with the results of cluster analysis. Secondly, the registered capital is the second influential factor for the development of scientific and technological enterprises, with the weight factor accounting for 19.59%. The registered original capital is the foundation for the development of enterprises. Therefore, the development potential of enterprises also has an important relationship with the registered capital.

The influence weight of intellectual property strength and time to enter the market is small, respectively, 0.81% and 1.50%, enterprises should pay more attention to the construction of intellectual property, and actively enhance the scientific and creative ability, so as to form a stable brand effect. Secondly, enterprises that enter the market late should also strive to improve the ability of science and innovation, increase the number of patents, and ensure better development in the field of science and innovation.

Next, TOPSIS method is used to calculate the development advantages of 10 representative enterprises, and the top 5 enterprises with the most development potential are selected. The calculation results are shown in Table 4:

Table 4. TOPSIS evaluation results of the top 5 most promising enterprises

firm	Positive ideal solution distance	Negative ideal solution distance	Relative proximity	Sort result
Hefei Guoxuan high-tech power energy Co., LTD	0.490	19554.041	1.000	1
Hefei Zhaocore Electronics Co., LTD	15384.157	4199.359	0.214	3
Hefei Zhongnan Optoelectronics Co., LTD	17734.924	1821.060	0.093	5
Hefei Taihe intelligent Technology Group	16108.139	3453.954	0.177	4
Hefei Hezuo intelligent Manufacturing Co., LTD	10093.093	9543.680	0.486	2

According to the calculation results of TOSIS, Hefei Guoxuan High-tech Power Energy Co., Ltd. is the enterprise with the greatest development potential, followed by Hefei Hezuo Intelligent Manufacturing Co., LTD., the third, fourth and fifth enterprises are Hefei Zhaoxin Electronics Co., LTD., Hefei Taihe Intelligent Technology Group and Hefei Taihe Intelligent Technology Group. The above five enterprises have the following characteristics: the period of entering the market is in the early stage, the registered capital is strong and the intellectual property strength is strong.

Therefore, other Hefei science and technology enterprises should actively absorb foreign investment, cooperate with foreign countries, and improve their own strength. At the same time, we should also strive to expand the number of patents, ensure their intellectual property strength, form a brand effect, and gain a firm foothold in today's competitive market environment. Optimize the industrial structure, learn from the development measures of outstanding enterprises at home and abroad, and improve the strength of science and technology innovation. At the same time, the government should also optimize the development environment of science and innovation enterprises, increase the funding for science and innovation enterprises, ensure that science and innovation enterprises have a good foundation for development, and build a suitable environment for the development of science and innovation enterprises, so as to improve the development confidence of science and innovation enterprises and realize the efficient development of science and innovation enterprises.

5. Correlation Analysis of Financial Supply and Structural Demand of Science and Technology Innovation Enterprises in Hefei

5.1. Research Index

Table 5. Related indicators of financial supply and structural demand of Hefei science and technology enterprises

Correlation index	Evaluation and interpretation of indicators
Financial supply	The total value of various financial products and services provided by the town government and banks to the enterprise
Registered capital	It refers to the total capital of the joint venture registered with the registration authority, which can reflect the development potential and scale of the enterprise to a certain extent
Number of enterprise brand projects	The number of brand projects of an enterprise can show the development of the enterprise and the competitiveness of the market
Enterprise scale	It can reflect the basic level of the enterprise, usually in terms of total assets, annual sales, office environment and the number of employees
Financing amount	Financing can promote the development of enterprises and further explore the market
Investment development value	The number of patents can reflect the innovation ability and development potential of an enterprise

5.2. Research index

In order to study the decoupling effect between economy and energy, this paper sets the financial supply and registered capital of 10 major science and technology innovation enterprises in Hefei as the dependent variables (set y) for evaluating the development status of the 10 enterprises. The independent variables affecting the structure of financial supply and demand, including the number of enterprise brand projects, enterprise scale, financing amount and investment and development value (x_1, x_2, x_3, x_4), are analyzed with typical correlation, so as to find the main influencing factors of financial supply and structural demand of scientific and technological innovation enterprises in Hefei City.

5.3. Description of research methods

Canonical correlation analysis is an analysis method that reflects the overall correlation between two groups of indicators by using the correlation between synthetic variable pairs. Its basic principle is: divide the objects to be studied into two groups, establish the expression between the two groups of indicators in general, analyze the correlation between the indicators, and the correlation reflects the size of the correlation coefficient. The value of the correlation coefficient is [-1, 1]. The larger the absolute value of the correlation coefficient, the stronger the correlation coefficient between variables. When the value of the correlation coefficient between variables is less than 0, it indicates that the variables are negatively correlated. When the correlation coefficient between variables is greater than 0, it indicates that the variables are positively correlated.

5.4. Calculation and result analysis

Table 6. Three Scheme comparing

Canonical correlation pair	Canonical correlation coefficient	Wilks' lambda	df 1	df 2
1	0.999	0.000	8.000	0.000
2	0.764	0.416	3.000	1.000

As can be seen from the calculation results, there are two calculation results of typical correlation coefficients between groups, which are denoted as typical correlation pair 1 and typical correlation pair 2. The calculated canonical correlation coefficients between the two groups were 0.999 and 0.764, respectively, and the two groups showed positive correlation between the two groups. In order to ensure the accuracy of the analysis results, group 1 with large typical correlation coefficient between groups was selected for subsequent correlation analysis.

Table 7. Typical load coefficient

Correlation index	Canonical correlation pair 1	Canonical correlation pair 2
Number of enterprise brand projects	0.145	0.913
Enterprise scale	-0.107	0.222
Financing amount	0.893	0.053
Investment development value	0.860	-0.003

Based on the above analysis results, only group 1 was analyzed, and the typical correlation linear expression was established as shown in (1).

$$y = 0.145x_1 - 0.107x_2 + 0.893x_3 + 0.860x_4 \quad (1)$$

According to the calculation results, the number of enterprise brand projects, the amount of financing, and the value of investment and development have positive effects on the development of enterprises. In addition, the typical correlation coefficients corresponding to the financing amount and investment development value are 0.893 and 0.860 respectively, which show strong positive correlation with the development of enterprises, and are the key factors to evaluate the development of enterprises. Large financing scale can promote the market extension of enterprises and improve the innovation and development space. At the same time, investment and development value can better reflect the innovation ability and development potential of enterprises, enhance the market competitiveness of enterprises, and effectively promote the development of enterprises. The typical correlation coefficient between firm size and dependent variable group is -0.107, showing a negative correlation. Therefore, science and innovation enterprises in Hefei should optimize the internal structure of enterprises, reasonably improve the scale of enterprises, and strive to enhance the hard strength of science and innovation with the main purpose of absorbing science and innovation talents. In this regard, in order to promote the expansion of the scale of science and technology innovation enterprises in Hefei and enhance their development momentum and self-confidence, the Hefei Municipal government should adhere to the development policy of promoting science and technology innovation enterprises, increase capital investment in science

and technology innovation enterprises, pay attention to the protection of intellectual property rights of enterprises, improve relevant laws and policies, provide a good environment for the development of patents of enterprises, and mobilize the enthusiasm of science and technology innovation development of enterprises. Form the advantages of Hefei's scientific and technological innovation and development; The scale of the enterprise affects the future development of the enterprise, and the enterprise should constantly optimize the enterprise structure and form a suitable development composition. At the same time, profitability and science and innovation strength are the cornerstone of the development of science and innovation enterprises, which should improve the awareness of science and innovation, improve the innovation and value of products, so as to enhance the competitiveness of enterprises in the industry, and provide guarantee for the survival and development of science and innovation enterprises.

6. Prediction and Analysis of Future Development of Science and Technology Innovation Enterprises in Hefei

6.1. Description of BP Neural Network

BP neural network is a multi-layer feedforward neural network trained according to the error backward propagation algorithm, and its calculation is divided into two steps: forward and reverse. Forward computation: The input mode is processed layer by layer from the input layer through the hidden unit layer and towards the output layer, where the neurons in each layer only affect the neurons in the next layer. If the desired result is not obtained in the output layer, the forward calculation is changed to the reverse calculation, the error signal is returned along the original connection path, and the error signal is minimized by modifying the weight of each neuron.

Each neuron receives input signals from other neurons, the neuron adds them up to get a total input value, then compares the total input value to the neuron's threshold, and then processes it through an "activation function" to get the final output. Common activation functions are the Sigmod function, the Tanh function, etc. (see (2) and (3)). This output is passed on layer by layer as input to the neurons.

$$f(x)=\frac{1}{1+e^{-x}} \tag{2}$$

$$f(x)=\frac{e^{x}-e^{-x}}{e^{x}+e^{-x}} \tag{3}$$

The activation function selected in this paper is identity function, whose node input is equal to output, which can better fit the linear regression task.

6.2. Selection of Relevant Indicators

Financial expenditure of science and technology, bond financing, stock market financing, loan financing of science and technology, investment intensity of research and experimental development funds as input variables, research and experimental development funds as evaluation indicators of future development of enterprises as output variables, to predict the future development of enterprises.

6.3. Model Building and Prediction

(1) Model parameter selection

Table 8. Relevant parameters of the model

Parameter name	Parameter value
Activation function	identity
solver	lbfgs
L2 regular term	1
Number of iterations	1000
Hide the number of layer 1 neurons	100

(2) Model accuracy analysis

Table 9. Model evaluation result

	MSE	RMSE	MAE	MAPE	R^2
Test set	384.654	19.613	14.335	5.913	0.944

MSE refers to mean square error; the smaller the RMSE is, the better the fitting effect of the model; the smaller the RMSE is, the higher the accuracy of the model; MAE is the average absolute error, reflecting the prediction error; the smaller the model, the more accurate it is; R2 is the goodness of fit of the model, the closer it is to 1, the better the model fits. There was no model comparison and only goodness of fit was analyzed. It can be seen from Table 9 that the goodness of fit of the training set of the model is 0.944, which is very close to 1, so the model has a good fit.

(3) Analysis of prediction results

Table 10. Forecast result

year	result	year	result	year	result
2022	144.7	2025	194.78	2028	291.76
2023	160.34	2026	226.86	2029	353.48
2024	174.87	2027	256.65	2030	394.57

From the forecast results, it can be seen that from 2022 to 2030, the research and experimental development funds of science and technology innovation enterprises in Hefei will steadily increase, and the development prospects of science and technology innovation enterprises in Hefei are good. Science and technology innovation enterprises in Hefei should formulate policy planning in line with the status quo of science and technology and financial development in Hefei, and form the top-level design effect of enterprise development. At the same time, the government should integrate financial funds, not only pay attention to the smes themselves, but also establish supporting preferential policies to encourage financial institutions and loan companies to serve smes, improve the support of financial science and technology enterprises, effectively dredging various financing channels, clarify the innovation policy orientation of Hefei regional science and technology enterprises, and at the same time supervise the scale and flow of funds. Ensure the efficient development of science and technology enterprises.

7. Hefei City Science and Technology Innovation Enterprise Development Strategy Suggestion

Based on the above analysis, it is concluded that the number of patents has the greatest impact on the weight ratio of the development of enterprises, and the number of patents greatly reflects the scientific and creative ability of enterprises. Secondly, registered capital is the second factor affecting the development of scientific and technological enterprises. The influence weight of intellectual property strength and time to enter the market is small, but it also has a certain impact. The number of enterprise brand projects, the amount of financing and the value of investment and development have a positive impact on the development of enterprises. However, firm size has a weak negative influence on firm development. This paper puts forward two strategies and suggestions for the development of Hefei science and technology innovation enterprises:

(1) The government promotes scientific and technological innovation policies, and enterprises improve their innovation capabilities

Macro science and technology policies affect the flow of funds and the development trend of enterprises. In this regard, Hefei Municipal government should formulate relevant policies in line with the current development status of science and innovation enterprises, coordinate the development relationship between financial institutions, science and innovation departments and enterprises, and form the top-level effect of science and innovation development. To increase capital investment in scientific and technological innovation enterprises, improve the financing channels of enterprises, and encourage financial institutions to provide services for scientific and technological innovation enterprises; The government has innovated management methods, improved service capabilities, guaranteed the living space of enterprises, increased attention to scientific and technological innovation enterprises, and reduced risks for enterprise development. At the same time, science and technology enterprises should strive to improve the innovation ability, form more patents and brand numbers, increase the export of foreign cooperation, and form the brand effect of enterprises.

(2) The government increased investment in scientific and technological innovation funds and optimized the development structure of enterprises

The government will increase the decentralization of research and experimental development funds to solve the bottleneck of enterprise development. At the same time, the increase of more development funds will help the emergence of new enterprises, and invest source support for the flourishing of Hefei science and technology enterprises. The government should play a guiding role in the survival and development of enterprises, establish sound policies such as financing guarantee and preferential policies for private enterprises, improve the financing environment of enterprises, reduce the development risks of enterprises, and promote the reform of financial supply. Enterprises should improve the development structure, develop within a reasonable enterprise scale, optimize the financing structure and innovate the development model. Make full use of market financial instruments, vigorously attract foreign investment, expand enterprise financing channels through the capital market, and continuously optimize the development structure of enterprises, so as to ensure the efficient development momentum of enterprises.

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