Evaluation of College Students 'Entrepreneurship Ecological Environment

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Abstract. A good entrepreneurial ecological environment is a prerequisite for the success of college students' entrepreneurship, which is directly related to entrepreneurial performance. This paper constructs the evaluation index system of college students' entrepreneurship ecological environment, and takes the undergraduate colleges in Shandong Province of China as the research object, and uses the AHP-fuzzy comprehensive evaluation method to evaluate the results. According to the evaluation results, the author proposes to establish college students as the main body of entrepreneurship. An entrepreneurial environment in which government, enterprises, universities, and families collaborate to promote and share resources. An entrepreneurial environment in which government, enterprises, universities, and families collaborate to promote and share resources.

1. Construction of Cooperative Evaluation System for College Students 'Entrepreneurship Ecological Environment

1.1. Construction of the Evaluation Indicators System

The evaluation index system of college students' entrepreneurship ecological environment follows scientific principle, systematic principle, comprehensive principle, hierarchical principle and dynamic principle.

1.1.1. Government environment

Unlike American entrepreneurship education, China has been following a "government-driven" approach to entrepreneurship education for the past few years. According to the actual national conditions and experience, it will also continue this government-led entrepreneurship education development model. According to the current national conditions, it is impossible to have a good entrepreneurial ecological environment for college students without government support. The main position of college students' entrepreneurship ecological environment construction is not only in colleges and universities, but also in the society outside universities. To apply the knowledge of innovation entrepreneurship education learned in colleges and universities into practice. The government also has more important tasks at the macro level, including advocating the concept of innovative entrepreneurship education and promoting the popularization of innovative entrepreneurship education. On the other hand, the government also needs to help with the practical transformation of innovative entrepreneurship education, for example, providing university students with innovative entrepreneurship tax breaks, simplifying procedures, and so on.
1.1.2. University Environment
The university is the core place that builds the university student entrepreneurship ecological environment, also is the starting point that most people start a business. The beginning of most entrepreneurs depends on the campus. It can be seen that the influence of colleges and universities on entrepreneurship education is very basic and crucial. The first step of building a good entrepreneurial ecological environment for college students must be colleges and universities. During the college period, it was a golden period for college students to cultivate their personality, value formation, and knowledge reserve. During this period, they formed their own foundation for future entrepreneurship, and more importantly, they also accumulated their personal contacts and social experiences in the process of future entrepreneurship.

1.1.3. Enterprise environment
Enterprises also play a pivotal role in building the entrepreneurial environment of college students. Building an entrepreneurial ecological environment for college students is a social support system. It cannot rely solely on universities or governments. It needs the support of all the subjects in society. The social support of enterprises is reflected in the following: the enterprise's goal of innovation and entrepreneurship education for college students is more in line with the market law, and it can clearly combine its own experience and market sense to find appropriate college students entrepreneurs and support them in innovation and entrepreneurship education. The rational introduction and effective use of high-quality enterprise resources in cooperation between schools and enterprises is the key to improving the level and quality of innovation and entrepreneurship education in local universities.

1.1.4. Family environment
In the process of innovation and entrepreneurship education, the support and assistance of families can achieve a multiplier effect. The help and support of families to entrepreneurs is reflected in the education of family entrepreneurship, the emphasis on innovation and entrepreneurship education, and financial support.

1.2. Construction of the System of Evaluation Indicators
To study the evaluation system related to innovation and entrepreneurship, on the basis of fully absorbing and drawing on the evaluation indicators of college students' entrepreneurship ecological environment, and combining the characteristics of college students' education with contemporary Chinese characteristics, Mainly from the government, universities, enterprises, families to formulate a college student entrepreneurship ecological environment coordination evaluation index system(table1).

| Standard layer | Substandard layer | Index layer |
|----------------|-------------------|-------------|
| Government environment | financial support | Public finance investment |
| | Policy support system support | Financial and tax support |
| | Service support | Policies and regulations support |
| | Software support | Creating atmosphere for innovation and Entrepreneurship Education |
| University environment | Hardware support | social security system |
| | system support | Innovation and entrepreneurship advisory body |
| | | Technology and information platform |
| | | Providing practical projects |
| | | Innovation and Entrepreneurship Education Teaching |
| | | Innovation and entrepreneurship base |
| | | Full-time organization |
| | | training for teachers |
| | | Creating atmosphere for innovation and Entrepreneurship |
| | | Entrepreneurship competition and entrepreneurship practice |
1.3. Weight analysis of evaluation index
Comparative qualitative data collection is obtained through expert surveys. The project identified 10 experts and 10 evaluation team members, including three government entrepreneurship officers, three prominent entrepreneurs and four entrepreneurship teachers, who scored each evaluation indicator. The expert scoring results are based on the median method to obtain the values in the final judgment matrices A-B, B1-C, B2-C, B3-C, and B4-C, the total index weight is shown in Table 2.

**Table 2. total weight**

| Standard layer                  | Substandard layer          | Index layer                                             |
|---------------------------------|----------------------------|--------------------------------------------------------|
| Enterprise environment          | financial support          | Fund raising and funding                                |
|                                 | Service support            | Provision of paid practice projects                     |
| Family environment              | Financial support          | Paid technology and information consultation            |
|                                 | Conceptual support         | Investment in innovation and Entrepreneurship Education|
|                                 |                            | Family education and understanding support              |

2. Evaluation of University Students' Entrepreneurship Ecological Environment

2.1. Fuzzy comprehensive evaluation method
Fuzzy Comprehensive Evaluation Method (FCEM) is based on fuzzy mathematics and applies the principle of fuzzy relation synthesis to quantify some factors which are not clear boundaries and difficult to quantify. It is a comprehensive evaluation method for the subordinate grade of the evaluated objects from multiple factors. The basic steps can be summarized as follows:

1. First determine the factor universe of evaluation objects.
   - set up N evaluation indicators
   \[ X = (X_1, X_2, \ldots, X_n) \]

2. Determine the rating level.
   - Suppose that each level can correspond to a fuzzy subset, that is, \( A = (W_1, W_2, \ldots, W_n) \), a set of levels.

3. Establish fuzzy relation matrix.
   - After the hierarchical fuzzy subset is constructed, it is necessary to quantify the evaluated thing from each factor \( X_i, (i=1, 2, \ldots, n) \), that is, to determine the membership degree of the evaluated thing to the hierarchical fuzzy subset from the perspective of single factor, and then to obtain the fuzzy relation matrix. The element of column J in row I represents the fuzzy subset of a evaluated thing from the perspective of factors.

4. Determine the weight vector of evaluation factors.
   - In fuzzy comprehensive evaluation, the weight vector \( U = (u_1, u_2, \ldots, u_n) \) of evaluation factors is determined. Analytic hierarchy process (AHP) is usually used to determine the relative importance
order of evaluation indicators. The weight coefficients are then determined and normalized before synthesis.

(5) Synthetic fuzzy comprehensive evaluation result vector

The fuzzy comprehensive evaluation result vector \( B \) is obtained by synthesizing \( U \) and \( R \) of each evaluated object with appropriate operator.

(6) Analyze the result vector of fuzzy comprehensive evaluation.

In practice, the most commonly used method is the maximum membership principle, but in some cases the use will be very reluctant, a lot of loss information, and even get unreasonable evaluation results. A weighted averaging method is proposed to calculate the membership level, which can be used to rank multiple objects according to their ranking positions.

2.2. Evaluation process

2.2.1. Data acquisition

Taking undergraduate colleges in Shandong Province as the main object of investigation, we made a questionnaire and carried out a survey by using the evaluation indicators. 2000 questionnaires were sent out and 1998 questionnaires were collected. Among them, 1995 questionnaires were valid, with an effective rate of 99.75%.

2.2.2. Data processing

According to the above introduction, the fuzzy comprehensive evaluation method is used to calculate the index. The calculation steps are as follows: the factor set, the weight set and the evaluation set are established according to the hierarchy.

Matrix 1: index level judgement matrix

\[
\begin{array}{cccc}
0.109 & 0.246 & 0.342 & 0.232 \\
0.077 & 0.212 & 0.345 & 0.275 \\
0.057 & 0.118 & 0.257 & 0.34 \\
0.093 & 0.199 & 0.350 & 0.278
\end{array}
\]

Matrix 2: sub index level - government support judgment matrix

\[
\begin{array}{cccc}
0.232 & 0.323 & 0.257 & 0.324 \\
0.275 & 0.275 & 0.275 & 0.275 \\
0.34 & 0.34 & 0.34 & 0.34 \\
0.278 & 0.278 & 0.278 & 0.278
\end{array}
\]

Matrix 3: sub index level - University support judgment matrix

\[
\begin{array}{cccc}
0.088 & 0.206 & 0.334 & 0.265 \\
0.093 & 0.229 & 0.350 & 0.248 \\
0.107 & 0.255 & 0.321 & 0.243 \\
0.07 & 0.162 & 0.293 & 0.306
\end{array}
\]

Matrix 4: sub index level - enterprise support judgement matrix

\[
\begin{array}{cccc}
0.093 & 0.229 & 0.350 & 0.248 \\
0.107 & 0.255 & 0.321 & 0.243 \\
0.07 & 0.162 & 0.293 & 0.306 \\
0.183
\end{array}
\]

2.2.3. Establish fuzzy relation matrix

According to the results of the questionnaire, the single factor judgement matrix of each index is obtained.
2.2.4. **single factor evaluation**

financial support=60.67;Policy support=65.25;system support=58.94;Service support=62.77;Software support=61.91;Hardware support=59.39;system support=66.94;financial support=59.86;Service support=60.87;Financial support=66.16;Conceptual support=63.73.

2.2.5. **multistage comprehensive evaluation**

Through the calculation of the index score, we obtain the score of 11 indicators in the sub-standard layer, and perform multi-level evaluation on the standard layer. Of these, $D=(20\ 40\ 60\ 80\ 100)^T$ is divided into $P_1 = B_1 \times D_1 = 61.89$. Similarly, the university environment has a score of $P_2 = 61.78$, an enterprise environment of $P_3 = 60.2$, and a family environment of $P_4 = 64.95$. According to the above score, after a multi-level comprehensive evaluation, the total score $P = 62.36$ for the synergy of college students' entrepreneurial ecological environment was finally obtained.

2.3. **Evaluation results**

The total score of college students 'entrepreneurial ecological environment coordination is 62.36. Between 60-70 in the level assignment area, the social support situation is passing and the score is low. This shows that the level of entrepreneurship ecological environment coordination of college students is in the initial stage, and there are many aspects that need to be improved and further strengthened.

3. **Conclusion**

The building of an overall entrepreneurial environment in China is a systematic project. It is not only necessary to bring into play the forces led by the government, but also to bring into play the forces of society, schools, enterprises and families, and form a joint force to integrate the government, society, universities, enterprises and families.

3.1. **The government is mainly guided**

(1) Strengthen the system and environmental construction. The government's intervention in entrepreneurial activities can be appropriately reduced, and the system of diversified, characteristic, and professional entrepreneurship, especially the intellectual property rights system, should be improved. The malicious competition in the process of entrepreneurship should be severely cracked down, a good entrepreneurial environment should be created, and the whole people should be actively encouraged and guided to start their own businesses.

(2) Promote the implementation of various entrepreneurship policies at higher levels. We will provide assistance in interpreting and interpreting entrepreneurship policies for all people, comprehensively promote the implementation of employment policies of higher levels of government, ensure the implementation of policies, and actively encourage and guide entrepreneurship activities for all.

3.2. **Colleges and universities are dominated**

(1) Explore the reform of entrepreneurship education curriculum. The aim of college entrepreneurship education curriculum should be to cultivate entrepreneurial awareness and spirit and enhance entrepreneurial ability as the main line, help to identify entrepreneurial opportunities, and help realize entrepreneurial dreams;

(2) Strengthening the construction of entrepreneurial teachers. The Institute of Innovation and Entrepreneurship was established to actively integrate entrepreneurship teachers and give full play to the role of backbone entrepreneurship teachers in entrepreneurship education. To achieve cooperation between schools and enterprises, entrepreneurship teachers participate in the practice of the top post, guide employees to the school to participate in entrepreneurship guidance, and cultivate a "combination of both" entrepreneurial teachers. In addition, the selection of entrepreneurship teachers actively participate in entrepreneurship training, improve entrepreneurial actual combat guidance ability, and promote the realization of entrepreneurial dreams;

(3) Strengthening the construction of entrepreneurship training bases in schools. We will strengthen practical teaching, sign cooperation agreements with enterprises, share entrepreneurial resources, set
up innovative training bases in schools, and create incubators and guidance service platforms for entrepreneurial projects to help realize entrepreneurial dreams. (4) Create a culture of entrepreneurship education. We will encourage the integration of entrepreneurship education and culture into campus cultural development, mobilize people to participate actively in entrepreneurial competitions, such as the Challenge Cup and the Internet + University Students' Innovation and Entrepreneurship Competition, and set up entrepreneurial societies to promote the transformation of scientific and technological achievements and promote the realization of entrepreneurial dreams.

3.3. Enterprises mainly cooperate
Private enterprises provide places for entrepreneurship practice, share successful entrepreneurial experiences and successful entrepreneurial models, improve the quality of their participation, jointly cultivate entrepreneurial talents, and integrate ideas into national entrepreneurship projects as a reserve for the development of enterprises themselves. We will realize the development of enterprises and the development of national entrepreneurship.

3.4. Families are mainly supported
(1) Change the concept of career choice. With the support of the government, universities, enterprises, and society, entrepreneurs should strive for the understanding and support of the family, so that parents can accept the concept of passive employment and change to the concept of independent entrepreneurship; (2) Provide family spiritual support. The family gives the entrepreneur spiritual and emotional comfort, becomes the entrepreneur solid backing.

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