

# Research on the Management Mechanism of University Incubation Park Based on Fuzzy Analytic Hierarchy Process

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**ABSTRACT.** In the era of “mass entrepreneurship and innovation”, many universities and colleges are actively building innovation and entrepreneurship platforms such as “college students innovation and entrepreneurship incubation bases”, and vigorously support students’ innovation and entrepreneurship activities in terms of policies, funding, and venues. Obviously, before starting entrepreneurship, college students need to be more prepared. One of the most important issues is whether they have the entrepreneurial competence. How to scientifically evaluate the entrepreneurial competence of college students is the key to solve this problem. This paper constructs the evaluation index system for innovation and entrepreneurship education, and analyzes it with fuzzy analytic hierarchy process to provide theoretical and practical guidance for promoting the development of innovation and entrepreneurship education in colleges and universities in China.

**KEYWORDS:** Fuzzy analytic hierarchy process, University innovation and entrepreneurship incubation park, Management mechanism

## 1. Introduction

Innovation drives development and entrepreneurship drives innovation. Innovation is an inexhaustible driving force for human development, a driving force for advancing the world, and a source for the sustainable development of a nation [1]. With the increasingly restrictions of resource and environment in our country, the extensive traditional mode of economic development has gradually come to an end, and economic development has entered a new normal, and innovation has become a new driving force for economic and social development. As public organizations, colleges and universities are the important part of the national innovation system and a base for the cultivation of government innovation and entrepreneurship. Their social service functions are increasingly prominent [2]. Colleges and universities provide education for the society. Because colleges and universities provide public products and public services, their management must conform to the dual goals of fairness and efficiency. Innovation and entrepreneurship education is an education model adapted to the new concept of “mass entrepreneurship, innovation by all people” in the context of the era of knowledge economy. It is an inevitable requirement and effective way for higher education to actively adapt to the development of the new era of information and economic globalization.

College Incubation Park provides a platform for college innovation and entrepreneurship. Colleges and universities put innovation and entrepreneurship work into practice by building a platform for college students’ innovation and entrepreneurship. College Students’ innovation and entrepreneurship Incubation Park provides a series of incubation services for innovation and entrepreneurship teams, so that innovation and entrepreneurship projects evolve from small to large, from weak to strong, and finally enter into society and market [4]. The main source of funds for college students’ entrepreneurship in China is self-financing because college students often lack the awareness and ability to attract social capital. Therefore, for this special group of college students, there is an urgent need for guidance in entrepreneurship. However, China’s current innovation and entrepreneurship education is still in its infancy and pilot stage, and a complete and systematic innovation and entrepreneurship education model and evaluation system have not yet been formed [5]. Therefore, this article takes the innovation and entrepreneurship education as the research object, constructs a scientific evaluation index system of innovation and entrepreneurship education, uses fuzzy analytic hierarchy process to evaluate, and provides a feasible scientific evaluation for improving the construction of China’s innovation and entrepreneurship education system and promoting the development of innovation and entrepreneurship education [6].

## 2. Principles and Methods of Constructing the Evaluation System of Innovation and Entrepreneurship Education in Higher Vocational Colleges

## 2.1 Problems of University Innovation and Incubation Park

The problems existing in the development of the innovation incubator are as follows: the functional orientation is not clear enough: the functional understanding of the innovation incubator is not clear enough. At present, due to the policy orientation and the prominent social and economic benefits of the innovation incubator, many innovation incubators have been built. However, some incubators for innovation and entrepreneurship did not focus on improving the operation mechanism of management mode and optimizing the service environment for innovation and entrepreneurship, but blindly built [7]. The government's position on incubator is not clear enough. Many local governments in the construction and development of innovation and entrepreneurship incubators for college students in the process of one-sided pursuit of output value is too eager for quick success and instant benefit. Lack of effective supply of innovation achievements: lack of effective supply of innovation resources. The innovation ability of innovation and entrepreneurship Incubation Park integration is insufficient. From the research, we found that many innovation and entrepreneurship incubators have not yet established the integration mechanism of production, learning and research, and the ability of integrated innovation is low, which can not effectively integrate innovation resources to play the role of innovation technology. The service system of innovation and entrepreneurship is not perfect. From the aspect of physical situation, the introduction of marketization in the management of university students' innovation and entrepreneurship incubator is insufficient. The opportunities and channels for social personnel to participate in the management of the incubator are basically in a blank area, and the construction of innovation and entrepreneurship incubator in these aspects is still relatively lacking. Establishing a service support system is a guarantee standard for the sound development of innovation and entrepreneurship incubation parks, and the basis for attracting innovative entrepreneurial talents and innovative entrepreneurship projects. The imperfect service system will greatly weaken the incubation quality and incubation capacity of innovation and entrepreneurship incubation parks [8].

The evaluation of innovation and entrepreneurship education is an important link in the process of innovation and entrepreneurship education in higher vocational colleges. The construction of the evaluation system should follow the objective laws of education, ensure the scientificity of the evaluation indexes, and test the rationality of the evaluation system. Innovation and entrepreneurship education is an educational system project in which the government, schools, society and other organizations work together. It involves education and teaching, practice platform, teaching staff, social support and other contents. The construction of the innovation and entrepreneurship incubation base for college students can not only effectively train college students, guide them to master the specific knowledge and ability of innovation and entrepreneurship, and reasonably master the technical elements, so as to continuously guide them to conduct self-examination from the perspective of economics and industry, thus better improving the quality and ability of innovation and entrepreneurship [9].

## 2.2 Analytic Hierarchy Process

Analytical Hierarchy process (AHP) is a concise and effective comprehensive method for calculating index weights. The basic idea of AHP is to divide a complex problem into several components, namely indicators, Group according to the logical dominance relationship between these parts to form a progressive hierarchical form, and then determine the relative weight of each layer against the previous layer by comparing them one by one, and finally combine the empirical judgment of experts to sort the indicators. As the name implies, the hierarchical structure model is to decompose a whole and inconvenient target for direct evaluation and analysis, and subdivide it into multiple levels that can reflect the overall target from different sides, such as decision-making level and index level, so as to achieve the effect of easy evaluation. In essence, it is a way of decision-making thinking. According to the laws of thinking and psychology, it makes the decision-making process hierarchical and quantitative, with the characteristics of human thinking analysis, judgment and synthesis. The analysis of the problems in the development of innovation and entrepreneurship incubator Park stratified the problems in the development of university students' innovation and entrepreneurship incubator park. The results are shown in Table 1.

Table 1 Problem Stratification In the Development of College Students' Innovation and Entrepreneurship Incubator

Target layer	Primary indicator	Secondary index
Problems in the development of incubator	Function positioning is not accurate enough	The government's position on incubator park is not clear enough.
		The function of innovation incubator is not clear enough.
	The effective supply of innovation achievements is insufficient.	The effectiveness of supply of innovative resources is insufficient.
		The innovation ability of innovation incubator integration is insufficient.

	The innovation and entrepreneurship service system is not perfect enough.	Inadequate introduction of marketization
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### 2.3 Intuitionistic Fuzzy Set

Constructing fuzzy judgments can increase the objectivity of the traditional analytic hierarchy process, but the fuzzy set only considers the aspect of membership in expert evaluation, and it is still not comprehensive in retaining evaluation information. The intuitionistic fuzzy number comprehensively considers the expert's evaluation in the evaluation. The degree of membership, non-membership and hesitation in the process can fully and fully retain the thought process of expert evaluation, thereby retaining the evaluation information to a greater extent. With the introduction of intuitionistic fuzzy sets, the intuitionistic fuzzy analytic hierarchy process is compared with the previous one. Fuzzy AHP and traditional AHP have become more objective and comprehensive. Roughly shown in Figure 1.

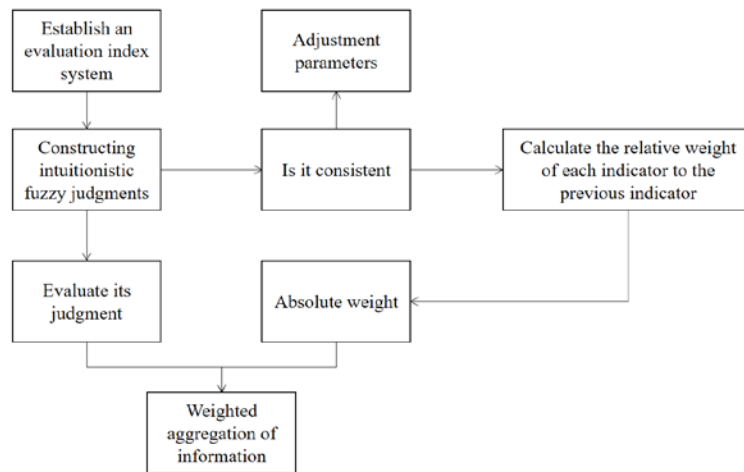


Fig.1 Application Process of Intuitionistic Fuzzy Ahp

## 3. Research on the Management Mechanism of University Students' Innovation and Entrepreneurship Incubation Base

### 3.1 Management System Structure of Innovation and Entrepreneurship Incubation Park

System construction is the fundamental guarantee for the operation and management mechanism of the university students' innovation and entrepreneurship incubation base, and is also the premise for all activities to be actively carried out. At present, there is no universally applicable innovation incubator management mechanism that can be popularized and adapted to the development stage of China's innovation incubator. Some are built independently, that is, the "one school, one garden" model, which is independently established by the university on which they rely. Some of them are cooperative construction models, which generally rely on cooperation between universities and local governments. There is also a joint construction, that is, the "multiple schools and one garden" model, which is jointly established by multiple universities based on their own resource advantages. Although the innovation and entrepreneurship incubation park has multiple construction models, no matter which model, the main participants of the innovation and entrepreneurship incubation park are mainly universities, governments, incubation park management institutions and enterprises. At the same time, it should also be widely integrated with the society. The financial department, industry and commerce, and taxation departments are effectively combined to continuously lay the foundation for the practice of college students' innovation and entrepreneurship incubation bases, so as to better strengthen the practice efficiency and significance of college students' innovation and entrepreneurship incubation bases. Strengthen the cultural construction of university students' innovation and entrepreneurship incubation base, and carry out systematic organization project management from the perspective of corporate culture atmosphere, so as to continuously improve the comprehensive quality of university students. Establish an effective open sharing mechanism, effectively promote the effectiveness of College Students' innovation projects, and fundamentally improve their contact with the outside world, so as to continuously promote the effectiveness and operability of the base construction. College Students' Entrepreneurship incubation base is a new type of social and economic organization, aiming at serving college students' entrepreneurship. It provides college students with places for research and development, production and operation, office, communication,

network and other facilities, and provides strong support in education and training, information consultation, policy guarantee, financing channels and other aspects, so as to reduce the cost and risk of College Students' Entrepreneurship and ensure college students' entrepreneurship Survival rate and success rate of start-up enterprises. In practice, it can be widely realized by means of website display, WeChat public platform display and other methods, and it can also ensure the effectiveness of the results propaganda through ground pushing activities, so as to better enhance the effectiveness of the construction of university students' innovation and entrepreneurship incubation base. With the help of network promotion, the achievements will be publicized to enhance the cohesion and popularity of the innovation and entrepreneurship incubation base for college students. In addition to school funding, it is also necessary to establish a necessary project funding mechanism to skillfully use the strength of society, government and enterprises to fund, manpower, creativity, management and other aspects of the project itself, so as to better promote the smooth progress of the project itself and solve the problems existing in the current project practice process. To build a perfect project incentive mechanism, so as to continuously enhance the enthusiasm of college students for innovation and entrepreneurship.

### **3.2 A Series of Supporting Services**

The establishment of innovation and entrepreneurship service network platform. In order to further enhance the popularity of entrepreneurial services and make them more information-based and comprehensive. The school has established a "entrepreneurship service network platform" within the website of the admissions and employment office. Create business conditions through the business service network platform. The first is entrepreneurship counseling, including the existing innovative entrepreneurship education courses, expert online guidance, etc. Then there is knowledge propaganda, including the interpretation of relevant policies, the release of relevant information, and the publicity of industrial and commercial legal knowledge. The service function area of the Innovation and Entrepreneurship Service Center can provide "one-stop" entrepreneurship services from industrial and commercial registration, financial assistance, financial agency, tax registration, legal advice, etc. The management function area of the Innovation and Entrepreneurship Service Center provides services such as property services and logistics services. Make full use of campus radio, various newspapers, magazines, mobile Internet and other media functions, pay attention to the use of media functions, grasp the campus propaganda position, and actively promote the effects of policies and measures for innovation and entrepreneurship, the construction situation and development prospects of incubator parks, and typical examples of innovation achievements and entrepreneurship To create a good atmosphere that encourages innovation and supports entrepreneurship throughout the university.

## **4. Conclusion**

"College Students' innovation and entrepreneurship incubation base" is a very good platform for the implementation of innovation and entrepreneurship education, which to a large extent promotes the improvement of College Students' innovation ability and lays a solid foundation for innovation and entrepreneurship. Scientific and effective operation and management of College Students' innovation and entrepreneurship incubation base, and constantly build a high-quality and high-level operation team, laying a solid foundation for the operation and incubation of specific projects. Based on the analysis of the function and construction of the incubator, this paper focuses on the management mechanism of the university students' innovation and entrepreneurship incubator. Under the framework of the management system of the innovation and entrepreneurship incubator in China, the existing management mechanism is to learn from each other. In this paper, fuzzy analytic hierarchy process is used to make a comprehensive evaluation of it. Empirical analysis shows that in the actual evaluation work, it is still necessary to continuously revise and perfect the index system to provide certain evaluation basis for promoting the healthy and orderly development of innovation and entrepreneurship education in China.

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