



Research on Evaluation System of National Innovation and Entrepreneurship Colleges

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Abstract. Innovation and Entrepreneurship College, as an important implementation carrier and practical platform for universities to provide relevant education, provides a new path for cultivating talents with innovative thinking, entrepreneurial awareness and entrepreneurial capacity in the context of the contemporary era. The objective of this research is to address the challenges associated with the sustainable improvement of innovation and entrepreneurship colleges, such as vague goal orientation, unclear institutional setup and function distribution, low degree of inter-school cooperation, single innovation and entrepreneurship practice platform and lack of comprehensive service platform, this paper takes national innovation and entrepreneurship colleges as the research object, constructs a comprehensive and systematic evaluation framework for national-level entrepreneurial education institutions. This framework comprises six primary indicators and 30 secondary indicators, which aim to enhance the practical applicability of the evaluation system. The framework is designed to provide direction for the development and improvement of key systems, including teaching and learning, research, and practice, within these institutions. It is expected that this will facilitate the growth and advancement of national-level entrepreneurial education institutions and other higher education entities involved in entrepreneurial education. The improvement of a more robust and effective system for the evaluation of national colleges of entrepreneurship will lay the foundation for the cultivation of high-quality entrepreneurial talent. In the future, based on the unique characteristics of different universities, a more targeted, instructive, and cost-effective evaluation model for national Shuangchuang colleges will be developed, so as to enrich the practical connotation of national colleges of enterprise and innovation, form an open ecosystem for entrepreneurial innovation, serve the innovative national strategy, and provide systematic solutions for the benign and sustainable development of teaching of entrepreneurship and innovation practice and the high-quality cultivation of innovative and entrepreneurial talents in the new era.

Keywords: grounded theory method; National Institute of Innovation and Entrepreneurship; Evaluation system.

1 Introduction

At the moment, countries all over the world are promoting new technologies and standards in the fields of new energy and digital economy, and the science and technology industry has entered a new innovation cycle. The policy of "designing to innovate" and "mass entrepreneurship and innovation" has deepened, placing scientific and technological innovation in a more remarkable position". It is urgent to establish an innovation and entrepreneurship education system with China characteristics. In the new era, the nation has made higher demands on innovation and entrepreneurship.

In the Party's report to the 20th CPC National Congress, General Secretary Xi Jinping pointed out that "education, science and technology and talents are the basic and strategic supports for building a socialist modern country in an all-round way¹. We must adhere to the principle that science and technology are the primary productive force, talents are the primary resource and innovation is the primary driving force, and thoroughly implement the strategy of rejuvenating the country through science and education, strengthening the country through talents and innovation-driven development"^{2,3}. In tough global competition, innovation plays a vital role in the long-term development of a country and a nation. Some universities have not paid enough attention to it, and the concept of innovation and entrepreneurship education lags behind, which is not tightly combined with professional education and divorced from practice; Teachers lack the ability to carry out innovation and entrepreneurship education, the teaching methods are single, and the pertinence and effectiveness are not strong; The practice platform is short, the guidance and assistance are not in place, miscellaneous issues require double innovation education reform to be further improved.

The Innovation and Entrepreneurship College, a recent addition to Chinese universities, is both a product of deepening educational reform and a catalyst and pioneer in advancing the reform of Shuangchuang education. However, the advancement of innovation and entrepreneurship colleges in China⁴ is restricted by the vague goal orientation, institutional setup and function distribution, low degree of inter-school cooperation, single innovation and entrepreneurship practice platform, lack of comprehensive service platform as well as an improved atmosphere. In 2022, Ministry of Education announced 100 first-batch universities that set up national innovation and entrepreneurship colleges, including 52 universities "Double-first-class" colleges. The geographical distribution of the first batch of national innovation and entrepreneurship colleges is shown in Fig. 1.

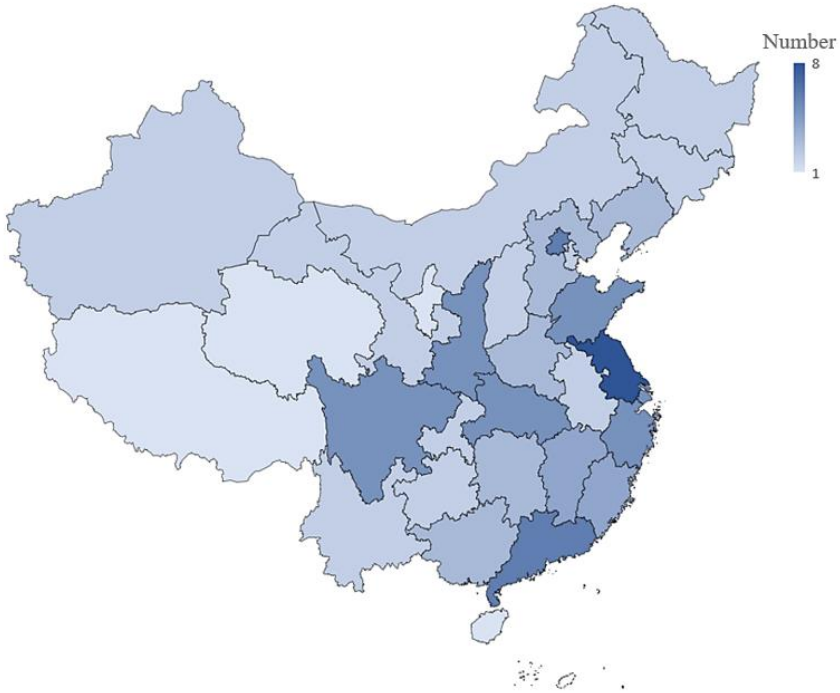


Fig. 1. Geographical distribution map of the first batch of national innovation and entrepreneurship colleges

Colleges and universities undertake the important task of cultivating emerging entrepreneurial skills. As a national Shuangchuang college, its dual-innovation education content, educational methods, construction mode and achievements are undoubtedly advanced and leading. The establishment of national innovative and entrepreneurial college represents the country's great attention to innovative and entrepreneurial education. Compared with local colleges, national colleges have apparent political direction, so the evaluation cannot be generalized. The relatively mature evaluation methods abroad are not fully applicable, and the domestic related research is still in its infancy.

Therefore, building a more academic and extensive assessment system of them is of great significance to promote the reform and development of it and promote the reform of innovative education. It is beneficial for establishing a foundation to cultivate emerging entrepreneurial skills and develop a solid material and technical base. It also provides theoretical guidance to the education management department, assisting in the creation of policies and opinions that support the construction and development of national double-innovation colleges.

2 Literature Review

The concept of "innovation and entrepreneurship education" evolved from "entrepreneurship education."⁵ The term "entrepreneurship education" was first introduced by UNESCO in 1989 in the "International Symposium on Education Facing the 21st Century" held in Beijing. Harvard business school, 1947.

Myles Mace, a professor at the College, pioneered the setting of the first course of entrepreneurship education, Management of New Enterprise, which marked the first appearance of academies for entrepreneurial innovation in university teaching. College builds an innovation and entrepreneurship ecosystem and promotes the improvement of Shuangchuang education by offering courses, projects and resources related to innovation and entrepreneurship. Therefore, foreign related research focuses on colleges of enterprise and innovation, mainly from the aspects of mode and mechanism.

The process of the development of the Shuangchuang education in China can be summarized as the initial exploration stage (2002-2009), the comprehensive promotion stage (2010-2014) and the deepening development stage (2015-present). In the new era, the state has set higher standards for the high-quality development of dual innovation education. Shuangchuang College is an important implementation carrier and practical platform for universities to deliver related education for students⁶, which integrates teaching, scientific research and service. Its essence lies in being a form of academic organizational innovation within universities. Since then, relevant Institute has stood out with its systematic and holistic construction concept. It has gradually gained recognition in the development of universities, and the rollout of dual innovation colleges within them has been fully implemented. From sporadic start to large-scale development, from spontaneous exploration of universities to conscious pilot by the government to all-round growth, the establishment of Shuangchuang colleges in domestic colleges and universities is a process of gradual infiltration and evolution.⁷ National scholarship holders primarily concentrate on the connotation, function, value, mode, and resource development.

The paper's research subject is the National Innovation and Entrepreneurship College, which is obviously policy-oriented⁸. The development goals of colleges of enterprise and innovation in different regions have different emphases⁸, and its evaluation cannot be generalized. The relatively mature evaluation methods abroad are not fully applicable, and the domestic related research is still in its infancy. Overall, the construction direction and institutional orientation of Shuangchuang colleges in Chinese lack clarity. The establishment of innovation and entrepreneurship colleges in some universities is not conducive to the integration of innovation and entrepreneurship education resources, the integration of innovation and entrepreneurship education with professional education, and the deviation from the development track of academic organizations.^{9,10} Various issues have somewhat hindered the development of Shuangchuang colleges in China. Therefore, it is necessary for the times to establish a comprehensive and systematic evaluation system and standardize the improvement track of Shuangchuang colleges.

Looking back on the previous research results, we can see that the current research on the evaluation system of China's innovation and entrepreneurship colleges still has

limitations: (1) The existing research mostly discusses the evaluation system based on a certain university or a certain type of university, and the conclusions are not universally representative; (2) The selection of evaluation indicators is relatively subjective, and some scholars only stay in the study of the necessity of evaluation system, and have not yet established a substantive evaluation system, so the practical application of evaluation indicators is not strong; (3) Currently, the evaluation of Shuangchuang colleges is fragmented and lacks a comprehensive system, making it challenging to effectively promote their positive development.¹¹

This paper uses the national innovation and entrepreneurship college as a framework to develop a comprehensive and systematic evaluation index system for these institutions, employing the grounded theory method, and proves the rationality and applicability of the evaluation model through example calculation, so as to enhance the practical application of the evaluation system of innovation and entrepreneurship education and promote the high-quality development of innovation and entrepreneurship education.^{12,13}

3 The Research Design

3.1 Research Methods

Grounded mechanism, as a conventional quality research technique, refers to the use of systematic processes to promote and induce grounded theory for a certain phenomenon. From bottom to top, forming a strict logic and complete system has become an important theoretical tool for exploratory research. Because the evaluation of national innovation and entrepreneurship colleges involves not only capital investment, teacher training and talent training, but also to Industry-University-Research's diverse subjects, in addition, the evaluation of innovation and entrepreneurship colleges is also affected by different regional development goals, so it is difficult to use quantitative research methods to carry out related systematic research. Therefore, based on the research method of programmed grounding theory, this paper first systematically and comprehensively obtains the original data by using the method of semi-structured interviews and consulting materials, and extracts the core categories of the evaluation index system of national innovation and entrepreneurship colleges according to the processes of open coding, spindle coding, selective coding and theoretical saturation test.

3.2 Grounded Theory—— Evaluation Index System

1. Data collection and analysis

This paper focuses on the benefits of Shuangchuang College to students and tutors, the capabilities, resources and existing problems needed for the construction of Shuangchuang College, and the significance and existing problems of the evaluation of Shuangchuang College¹⁴, and uses the method of semi-structured interviews and consulting materials to obtain the original data. Through semi-structured in-depth interviews with students in Shuangchuang College, Shuangchuang tutors, Shuangchuang incubation institutions and university administrators who participated in Shuangchuang

activities, a total of 20 people with rich experience in innovation and entrepreneurship were interviewed. Based on the common problems of different types of interviewees, corresponding targeted questions were added, and 10 project reports were formed, with a total of about 82,700 words.

2. Paradigm refining and evaluation index system construction

Open coding is a process of coding and conceptualizing the original data sentence by sentence, and then integrating related concepts and giving category names. Firstly, this paper analyzes 20 interview records sentence by sentence, and obtains 216 representative original sentences; 12 policy documents of innovation and entrepreneurship education were systematically interpreted and analyzed, and 46 representative original sentences were obtained. After eliminating the invalid, repetitive and unclear samples in the data, 323 initial concepts and 30 initial categories were obtained. The initial category here is the secondary index in the index system.

Spindle coding is a process of in-depth examination, induction and clustering of the initial concepts after open coding to reveal the logical relationship between concepts, and then identify the main category and its corresponding sub-category. In this step, according to the degree of correlation between the secondary indicators, we summarize and form the main category, where the main category is the primary indicator in the indicator system. In this paper, 30 initial categories are analyzed and sorted out, and six main categories, namely, the first-level indicators, are summarized, namely, dual-innovation education and discipline construction, dual-innovation teachers and team construction, students' employment and entrepreneurship quality, dual-innovation platform and facilities construction, culture and rules and regulations construction, and innovation and entrepreneurship satisfaction feedback. Under the first-level indicators of dual-innovation education and discipline construction, there are five second-level indicators: dual-innovation education specialty construction, dual-innovation education curriculum system, dual-innovation experimental research platform, academic research marking achievements, and vertical and horizontal scientific research project establishment; Under the first-level indicators of double-innovation teachers and team building, there are five second-level indicators: double-innovation expert team building, teachers' international level building, entrepreneurial tutor building, teachers' academic qualifications and professional titles, and school-enterprise cooperation ability building; Under the first-level index of students' employment and entrepreneurship quality, there are salary structure, field structure, career development structure, division of employment areas and employment evaluation of enterprises. Under the first-level indicators of dual-innovation facilities and incubation services, there are five second-level indicators: hardware infrastructure guarantee, intelligent data platform guarantee, integration of production and education resources, awards of dual-innovation bases and project incubation service system; Under the first-level indicators of culture and rules and regulations construction, there are five second-level indicators: double-creation brand system construction, double-creation digital marketing promotion, college organization and management construction, college development planning and construction, and college governance system construction; Under the first-level index of innovation and entrepreneurship satisfaction feedback, there are five second-level indicators: the satisfaction of affiliated universities, the satisfaction of college teachers, the satisfaction of

college students, the satisfaction of cooperative units and the satisfaction of government agencies.

3. Selective coding

Selective coding is a process of systematically analyzing the internal logic of the main category and getting the core category on the basis of spindle coding. Focusing on the key elements such as teachers, disciplines, funds, systems, honors and achievements, this study systematically interprets and analyzes the valuation of national Shuangchuang colleges, relying on the list document of 100 native Shuangchuang colleges issued by the Ministry of Education, and combining with the relevant indicators issued by official website, and obtains 265 initial concepts, 30 initial categories and 6 main categories. The six main categories include dual-innovation education and discipline construction, dual-innovation teachers and team construction, students' employment and entrepreneurship quality, dual-innovation platform and facilities construction, culture and rules and regulations construction, and feedback on entrepreneurial and innovative satisfaction.¹⁵ On the basis of the "two-wheel" guarantee of dual-innovation platform and facilities construction and culture and rules and regulations construction, we should consolidate the two educational foundations of dual-innovation education and discipline construction and dual-innovation teachers and team construction, thus building a good ecosystem of innovation and entrepreneurship, forming two major feedbacks and evaluations of related satisfaction and academic employment and entrepreneurship,¹⁶ which provide impetus for continuous improvement and constitute a comprehensive evaluation model of national innovation and entrepreneurship colleges.

4. Theoretical saturation test

Theoretical saturation test is to supplement, improve and verify the core category again, so as to effectively protect the theoretical value and practical guiding significance of the core category. In order to fully verify the theoretical model saturation, this paper supplements five evaluation indexes of innovation and entrepreneurship colleges in colleges and universities as raw materials for open coding, spindle coding and selective coding again. The result of coding test shows that all the new information about the evaluation practice mode of national innovation and entrepreneurship colleges can be included in the above categories, and no new important categories and relationships appear during the test process, and the logical relationship between concepts has not changed, indicating that it has reached the requirement of theoretical model saturation.

4 Conclusion and Prospect

4.1 Conclusion

Innovation and Entrepreneurship College, as an important implementation carrier and practical platform for universities to deliver Shuangchuang education, provides a new path for cultivating talents with innovative thinking, entrepreneurial awareness and entrepreneurial capacity in the new age. Addressing Shuangchuang education issues for sustainable development, such as paying more attention to form than content, paying more attention to awards than practice, taking national innovation and entrepreneurship colleges as the research object, and a comprehensive and systematic evaluation index

system of national Shuangchuang schools is constructed in this paper. through grounded theory method, and constructs 6 first-level indicators and 30 second-level indicators to improve the practical application of the evaluation system of innovation and entrepreneurship education, with a perspective to pointing out the direction for the construction and improvement of national Shuangchuang colleges.

4.2 Outlook

Due to the differences in school-running purposes and concepts, characteristics of disciplines and specialties, regional macro-environment, and endowment of resources and abilities, the valuation of Shuangchuang colleges in different universities may present different model structures. In the future, a more targeted, instructive and economical evaluation model will be developed to reflect the variations among different universities, so as to enrich the practical connotation of national Shuangchuang colleges, form an open framework for innovation and business creation, serve the innovative national strategy, and provide systematic solutions for the benign and sustainable development of Shuangchuang education practice and the high-quality cultivation of innovative and entrepreneurial talents in the next age.

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