

The Frontier Hot Spot and Evolution Trend of Entrepreneurship Culture Education Research in Domestic Colleges and Universities — Visual Analysis of CiteSpace Based on CSSCI Articles

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Abstract: By using CiteSpace software to draw knowledge maps of authors, institutions and keywords, the paper discusses the frontier hot spots and evolution trends of entrepreneurship culture education research in universities in China. This paper analyzes and reviews the CSSCI literature of entrepreneurship culture education in colleges and universities published in CNKI from 1999 to 2020. The research results show that the hot keywords are: innovation, talent cultivation, The United States, countermeasure research; The research frontier is: the integration of innovation and innovation under the new situation, the entrepreneurial ecosystem under the new situation.

Keywords: college entrepreneurship culture education; visualization analysis; frontier hot spot; evolution trend

1. Introduction

Nowadays, when countries around the world implement innovation-driven development strategies, institutions of higher learning are regarded as important positions, mainly because universities can serve as supporting elements, such as talents, intelligence, science and technology, ideology and culture, etc. [1]. It has been more than 20 years since the promulgation of "Education Revitalization Plan for the 21st Century". From the beginning to the prosperity of entrepreneurship culture education in Chinese universities, it is not only due to the policy support from the national level, but also due to the attention of domestic colleges and universities on talent training. Twenty years of development has left a lot of valuable research literature. Through sorting, hot frontiers and evolution trends of entrepreneurship culture education in domestic colleges and universities can be summarized, providing important reference for future related research.

2. Research Methods and Data Sources

2.1. The Research Methods

The research software used in this study is the soft CITESPACE visualization analysis software developed by Dr. Chaomei Chen of Drexel University after many years. This software is very popular and mainly used for research hotspot and trend analysis, which can effectively analyze the research hotspot and trend in a certain research field.

2.2. The Data Source

Institute in literature both from China hownet (CNKI), in CNKI "advanced search" selected "journal", in order to ensure the comprehensive, enter the theme "entrepreneurial culture in colleges and universities", or containing "university entrepreneurial culture" or "entrepreneurship education in colleges and universities" or contain "university entrepreneurship education", retrieval condition is "accurate", literature source category for "CSSCI", The retrieval period was from 1999 to 2020. A total of 1311 references were retrieved, and 1257 valid references were obtained after excluding those which could not be used in this study, such as news, publication solicitation, conference notice, etc. The bibliographic information was exported from the database in Refworks format as the sample data for the research.

3. Results of Econometric Analysis on Entrepreneurship Culture Education in Colleges and Universities

3.1. Annual Literature Analysis

The change of the quantity of published literature can reflect the development of a certain field to a certain extent. The annual distribution of research literature on entrepreneurship culture and education in Colleges and universities in China in the past 20 years is statistically analyzed, as shown in Figure 1.

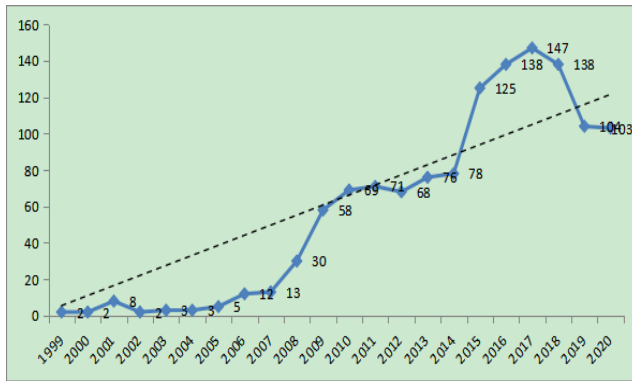


Figure 1. Annual Distribution of literature on entrepreneurial culture and education in Colleges and Universities (1999-2020)

In the past two decades, the average number of articles published in the field of entrepreneurial culture in Chinese universities was 57, among which the average number of articles published from 1999 to 2008 was only 8 per year. The number of publications increased rapidly in 2009, reaching 58. By 2014, the annual number of published papers was 70. From 2015 to 2020, the number of published papers averaged 126 per year, among which 147 papers were published in 2017. On the whole, from 1999 to 2020, the number of literature on entrepreneurship culture and education in Chinese colleges and universities increased year by year.

3.2. Author Analysis

By econometric analysis of the authors, we can not only find out the core authors in the research field of entrepreneurship culture and education in colleges and universities, but also find out the communication and cooperation among scholars in this field. Run CiteSpace, set the time span to "1999-2020", time slice to 1, select "author" from node type, set threshold to Top =50, set the number of key words (C), keyword cited number (CC), and keyword co-citation coefficient (CCV) to 0, 1, and 20. Finally, the author co-occurrence knowledge map with network nodes of 1676, connection number of 1108 and density of 0.0008 was obtained.

The larger the nodes in the atlas, the higher the frequency of occurrence of the researcher. Professor Huang Zhaoxin ranked the first with 22 papers. Professor Zhuo Zelin followed with 15 articles, and Professors Yan Maoxin, Xu Xiaozhou, Mei Weihui and Wang Zhanren all published more than 10 articles. Of the line graph represents the cooperation between researchers, connection number represents the number of the researchers work with others, the degree of thickness represents the number of academic cooperation between researchers, including Huang Zhaoxin, Zhuo Zelin, Xu Xiaozhou, Shi Yongchuan, Wang Zhiqiang and Zeng Erlei prolific authors frequency of communication and cooperation with others is more. On the whole, a group of authors with Huang Zhaoxin, Zhuo Zelin, Yan Maoxin, Xu Xiaozhou, Wang Zhanren, Shi Yongchuan, Wang Zhiqiang and Zeng Erlei as the core has been formed in the research field of entrepreneurship culture and education in Colleges and universities in China, and their individual cooperation is relatively close.

3.3. Research Institution Analysis

When running CiteSpace, set other parameters the same as the author's co-occurrence knowledge graph except that the node type is set to Organization. A mechanism co-occurrence knowledge map with node number of 395, connection number of 112 and density of 0.0014 was obtained.

From the perspective of types of research institutions, all the research institutions of entrepreneurship culture and education in Chinese universities are universities, among which Zhejiang University, Wenzhou University, Wenzhou Medical University and Northeast Normal University are the main ones. In terms of the number of articles published, the number of articles published on entrepreneurship culture and education in Chinese universities mainly includes 36 articles published by the College of Education of Zhejiang University, 22 articles published by the Ideological and Political Education Research Center of Northeast Normal University, 17 articles published by the College of Entrepreneurship talent Training of Wenzhou University, and 13 articles published by the College of Innovation and Entrepreneurship Education of Wenzhou Medical University. From the point of research group, it is not hard to see, has been formed to zhejiang university college of education, college of wenzhou university entrepreneurial talent training innovation entrepreneurship education college, wenzhou medical university, northeast normal university ideological and political education research center cluster core research institutions, and their individual cooperation between more closely.

4. An Analysis of the Research Hotspots of Entrepreneurship Culture Education in Colleges and Universities

4.1. Research Hot Topic Analysis

Keywords can condense the core content of the article and reflect the hot key points in this field [2]. Therefore, this study uses CiteSpace to analyze the keywords in the research literature on entrepreneurship culture and education in colleges and universities, so as to understand the research hotspots in the field of entrepreneurship culture in colleges and universities in China in the past two decades and draw the knowledge map of keywords.

In order to ensure the effectiveness of co-occurrence of keywords, some keywords are not considered in the research hotspot, so the invalid keywords are deleted, and the keywords with the same meaning but different expressions are combined. The plus sign "+" in the figure represents the keywords in the literature, where the size of "+" represents the occurrence frequency of keywords, the large plus sign represents the occurrence frequency of keywords, and the small plus sign represents the occurrence frequency of keywords. The line between keywords represents their co-occurrence relationship, and the thicker the line, the better the co-occurrence relationship [3]. As can be seen from the size of nodes in the figure, there are more keywords such as innovation,

talent cultivation, America, countermeasure research, local universities, system, cultivation path, practice, mode, industry-education integration, etc., and these hot words are also closely related. In order to further clarify the hot topics of entrepreneurship culture education research in colleges and universities in China, the mediating centrality and frequency of keywords are derived and made into a table.

The mediating centrality represents the mediating effect of research on this keyword on other keywords in the network atlas. The higher the mediating centrality is, the more significant the influence is [4]. Therefore, frequency and intermediary centrality are used as the judgment basis of research hotspots. Keywords with higher frequency and more than 0.1 mediators include "innovation", "talent cultivation", "America" and "countermeasure research". These keywords basically reflect the hot spots and core themes of entrepreneurship culture education research in colleges and universities in China in the past 20 years.

4.2. Research Field Analysis

Keywords clustering can analyze the complex connections in the co-occurrence knowledge graph to form the main research fields of entrepreneurship culture education in colleges and universities. On the basis of adjusting the knowledge graph of keyword co-occurrence, LLR algorithm was used to identify each cluster, and the number of clusters was set to 10 to obtain the knowledge graph of keyword clustering and the cluster table of keyword co-occurrence network.

The Size of general keyword co-occurrence cluster is greater than 10, and Sihouette is greater than 0.7, indicating that the data is desirable. It can be seen that the Size of the keywords is greater than 10 and Sihouette is greater than 0.7, indicating that the co-occurrence clustering of the 9 keywords is effective.

The first cluster is "innovation and entrepreneurship". It mainly contains key words such as crowd maker space, maker education, innovation and entrepreneurship education. Why has innovation and entrepreneurship become a high-profile high-frequency keyword? This question is not difficult to answer. Thanks to the call made by Premier Li Keqiang at the Summer Davos Forum, "mass entrepreneurship and innovation" has been incorporated into the national education strategy [5].

The second cluster is "professional education". Mainly including, deep integration, local universities, collaborative education and other key words. The reason why professional education appears in entrepreneurship education is that entrepreneurship education should not simply rely on entrepreneurship education, but should also be infiltrated and organically integrated in professional education. Under the national trend, the integration of professional education and entrepreneurship education will be the best way to start a business.

The third cluster is "talent cultivation". It mainly contains keywords such as entrepreneurship, entrepreneurial consciousness, entrepreneurial skills and

training. The state no longer pays attention to the cultivation of innovative and entrepreneurial talents [6]. Through personnel training can better realize the goal of education, cultivation of talents is one of the important paths for innovative entrepreneurial talent, which contains the training target, content, method, means and so on all is a hot topic, and only adhere to the continuous reform of talent training, adhere to the innovative undertaking new measures, can effectively improve the quality of personnel training.

The fourth cluster is "revelation". It mainly includes the United States, American universities, characteristics, functions and other key words. Entrepreneurship culture education first emerged in the United States and other developed countries. The institutional environment related to entrepreneurship education is relatively mature, the talent cultivation system in developed countries is complete, and students have good innovation quality. Therefore, it has important reference value for the development of entrepreneurship culture education in Colleges and universities in China, and therefore attracts the attention of Chinese scholars.

The fifth cluster is "value". It mainly includes influencing factors, curriculum construction, connotation, evaluation system and other key words. The realization of the value of entrepreneurship education is the goal pursued by scholars, and the country has also implemented a series of reforms, mainly to realize the value of entrepreneurship. Only continue to adhere to the reform, can better realize the value of entrepreneurship.

The sixth cluster is "problems". Mainly including path, employment, dilemma, path choice and other keywords. In this cluster, researchers focus on issues related to entrepreneurship culture education in colleges and universities, focusing on government functions, cultivation paths, employment and other issues as well as solutions.

The seventh cluster is "entrepreneurial ability". It mainly contains the key words of entrepreneurial intention, entrepreneurial motivation, entrepreneurial environment, entrepreneurial quality and so on. The state believes that the object of entrepreneurship education should be all students, and colleges and universities should integrate the whole process of talent training and pay attention to the formation of entrepreneurial ability in the process of talent training, so as to better carry out entrepreneurship.

The eighth cluster is "WTO". It mainly contains key words such as education model, ordinary university, innovation model and triple helix. On November 15, 1999, China signed a bilateral agreement with the United States to join the WTO. Chinese universities should promote the concept of education internationalization. What kind of education model should be adopted and how to innovate the education model has become an important issue after China's entry into WTO.

The ninth cluster is "ecosystem". It mainly contains key words such as new era, new era, international comparison and ecological factors. Entrepreneurial ecosystem is the value pursuit in the future. The state

clearly proposes the construction of entrepreneurial ecosystem. Only the interaction of energy flow and entrepreneurial material cycle between the innovation and entrepreneurial subject, community and supporting environment can continuously inject power and vitality into the economy and society.

5. Evolution Path and Trend of Entrepreneurial Culture Education Research in Colleges and Universities

5.1. The Evolution Path of Entrepreneurial Culture Education Research in Colleges and Universities

On the basis of clustering graph, the time zone view option in information visualization is selected to make statistics and draw key words frontier time sequence graph.

From the beginning to now, the research development of entrepreneurship culture education in Chinese universities can be roughly divided into the following three stages.

Stage I: Initial period (1999-2008). At this stage, the number of literature published on the research of special education teachers is small, and the research content is relatively simple, mainly focusing on innovation and entrepreneurship. The "Education Revitalization Plan for the 21st Century" was issued in 1999, in which it is clear that entrepreneurship education should be strengthened. Therefore, since then, the study of entrepreneurship culture education in colleges and universities in China began. Although the growth rate of research literature is relatively slow, since then, more and more researchers have begun to pay attention to entrepreneurship culture education in colleges and universities.

Stage 2: Consolidation period (2009-2014). At this stage, the number of literature published on entrepreneurial culture education in colleges and universities increased rapidly, and the research content was rich, mainly including industry-education integration and system. During 2009 to 2014, the country successively promulgated a lot about entrepreneurial culture in colleges and universities education policy, entrepreneurship has urged universities attach importance to innovation, and referred to in the reform of talent cultivation, and involves various aspects of innovative undertaking, such as entrepreneurship competition, through the national policy guiding role, many researchers industrious cultivation, literature was bigger, Left behind a lot of valuable research results.

Stage 3: Boom period (2015-2020). At this stage, the number of literature published on entrepreneurial culture education in colleges and universities increased rapidly in professional education and ecosystem. Since Yuan Guiren, the minister of Education, said at the conference that the integration of professional education and entrepreneurship education should be promoted, universities have carried out reforms in the process of talent training, mainly focusing on the integration of professional innovation and the construction of an ecosystem. These measures have greatly promoted the

training of innovative and entrepreneurial talents, integrating innovation and entrepreneurship into the whole process of talent training, and making talent training more effective.

5.2. Trend Analysis of Entrepreneurial Culture Education Research in Colleges and Universities

Mutant words mainly refer to the number of occurrences of individual words within a short period of time. The more they appear, the more popular they are. Therefore, mutant words can be used to judge the frontier trend of a certain research field. On the basis of time zone atlas, the mutation words in information visualization are selected to further analyze the mutation of university entrepreneurial culture keywords.

The top seven mutation keywords from 1999 to 2020 are "countermeasure research", "ecosystem", "entrepreneurial consciousness", "local universities", "Under the new situation", "maker" and "employment", among which the keyword "under the new situation" starts from 2018 and continues to 2020. Combined with the keyword time zone atlas analysis, it is inferred that the innovation convergence or entrepreneurial ecosystem under the new situation is still a key development area in China in the future. Among them, the entrepreneurial ecosystem of colleges and universities under the new situation will become the forefront of the research on entrepreneurial culture and education in colleges and universities in China.

6. Research Conclusions and Prospects

This study makes a visual analysis of the research status, research hotspots and research frontiers of entrepreneurship culture and education in Chinese universities from 1999 to 2020, and obtains the following results.

From the perspective of the number of literature published, the number of literature published on entrepreneurship culture education in Chinese universities from 1999 to 2020 shows an increasing trend year by year, indicating that entrepreneurship culture education in universities has attracted extensive attention from Chinese scholars.

From the perspective of researchers, the research field of entrepreneurship culture and education in Chinese universities has formed a group of authors with Huang Zhaoxin, Zhuo Zelin, Yan Maoxin, Xu Xiaozhou, Wang Zhanren, Shi Yongchuan, Wang Zhiqiang and Zeng Erlei as the core, and there is a thick connection between them, which can be seen that there is close cooperation between them.

From the perspective of research institutions, all the research institutions of entrepreneurship culture and education in Chinese universities are universities, among which Zhejiang University, Wenzhou University, Wenzhou Medical University and Northeast Normal University are the main ones. Core research clusters have been formed, including The Cluster of School of Education of Zhejiang University, the cluster of Entrepreneurial Talent Training College of Wenzhou

University, the cluster of Innovation and Entrepreneurship Education College of Wenzhou Medical University, and the cluster of ideological and Political Education research Center of Northeast Normal University, and there is close cooperation among all research clusters.

From the perspective of hot research words, keywords such as "innovation", "talent cultivation", "America" and "countermeasure research" basically reflect the hot spots and core themes of entrepreneurship culture education research in colleges and universities in China in the past two decades.

From the perspective of research fields, scholars' research in recent years mainly focuses on the related fields of in-class study, including the attitudes of teachers of special education and general education towards in-class study and the development mode of Chinese localized in-class study.

From the perspective of research trends, the integration of professional innovation and entrepreneurial ecosystem under the new situation are still key development fields in China in the future. Among them, the entrepreneurial ecosystem of colleges and universities under the new situation will become the forefront of the research on entrepreneurial culture and education in colleges and universities in China.

In short, future research should aim at promoting the formation of entrepreneurial culture in colleges and universities, and call for more local governments and educational administrative departments to provide support for colleges and universities [7]. Domestic colleges and universities should provide a good platform for college students to practice entrepreneurship and pay more attention to it. Domestic local colleges, private colleges and other types of schools to explore the implementation of the entrepreneurial culture of one school; Teachers should truly integrate professional education and entrepreneurship education into the curriculum; All sectors of society actively interact with colleges and universities, provide more opportunities and funds for the cultivation of entrepreneurial culture in

colleges and universities, and jointly build a new education model integrating industry and education.

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