

Conference Paper

The Application of FAHP on Influencing Factors Evaluation Entrepreneurial Intention of College Students

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Abstract

In this article, the concept of entrepreneurial intention of college students is combed through literature review. And establishing a three dimensions and 16 criteria for the evaluation of the influencing factors of college students' entrepreneurial intention. Next, FAHP method is used to evaluate local college students' entrepreneurial intention. The results can improve the college entrepreneurship curriculum system, and enhance the pertinence and effectiveness of college entrepreneurship guidance.

Keywords: entrepreneurial intention, FAHP, entrepreneurship guidance

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1. Introduction

In recent years, due to the increase in the number of higher education schools and the expansion of the enrollment scale, the number of university graduates has increased significantly every year, and phenomenon of graduates leaving the school to work has emerged. In addition, the slowdown in the global economic process has affected the quantity and scale of talent demand and further increased the pressure on employment. However, the employment of college graduates has become a social issue of great concern to all sectors of the society. Under the influence of this state, a number of entrepreneurial waves have been created that directly stimulate employment through entrepreneurship. In the era of knowledge-based economy, college students, as future laborers in the society, must have their own professional abilities and entrepreneurial awareness, qualities and skills.

Next, there is a serious difference in the standards of entrepreneurship education in universities. Not only does education vary, but the level of schooling in some schools is still very different. This is related to the lack of mastery of the state of their own

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education in universities, but more importantly, these universities do not have a scientific, rational, rational normative evaluative system that can be used to assess differences between themselves and others. This has led many universities to develop and optimize entrepreneurship education, but it is difficult to choose the wrong direction of development in the case of self-assessment. It only results in less efforts, but it causes a decrease in the energy efficiency of entrepreneurship education.

In view of this, exploring the influencing factors of college students' entrepreneurship not only facilitates college students to enhance their entrepreneurial ability, foster entrepreneurial skills, select suitable entrepreneurial projects, and understand the entrepreneurial environment, but also assists institutions of higher learning pay attention to entrepreneurship education, thereby enhancing college students' entrepreneurship. In the process of competence, we will make an overall improvement and click again. Therefore, based on the collation and analysis of literature related to entrepreneurial influencing factors[]. According to the related literature on influencing factor of entrepreneurship, this paper develops a influencing factor of entrepreneurship evaluation model of college student's intention by combing fuzzy analytic hierarchy process (FAHP). Final results will provide an important reference for strengthening entrepreneurial education or improving entrepreneurial ability.

2. Literature Review

2.1. The definition of entrepreneurship

Entrepreneurship is the combination of labor, knowledge, technology, management, capita, and other production factors to form productive activities. Vesper pointed out that "For an economist, an entrepreneur is a person who combines resources, labor, raw materials and other assets to create greater value, and is also a person who introduces reform, innovation and a new order. For psychologists, entrepreneurs are prompted by some motivation, in order to gain a certain benefit, perform some experiment, achieve some goal, or avoid being obedient to others etc. [12]." For a businessperson, the emergence of entrepreneurs is a threat, a dare to do for the competitors. However, the same entrepreneur may be an ally, a supplier of resources, a customer, who creates wealth for others, who discovers better ways to use resources and reduces waste, and who creates job opportunities for others.

Although the above definition examines the meaning of entrepreneurs, it includes the entrepreneur's basic characteristics such as innovation, business opportunities,

organization, creation, wealth and risk taking. "Entrepreneurship" is the creation of a business that belongs to oneself. It has a founding meaning and a new established business. And entrepreneurship is the process of discovering and capturing opportunities and creating new products or services, and realizing their potential value. Thus, entrepreneurship must contribute time and effort, take corresponding financial and spiritual and social risks, and obtain monetary returns, personal satisfaction and independence.

2.2. The definition of entrepreneur

From the definition of entrepreneurs in related literatures, it can be found that most scholars think that entrepreneurs should be able to take risks, innovation, work hard to manage/manage enterprises, obtain profits, etc. ([3, 11]). However, Bygrave simply defined for entrepreneurs that an entrepreneur is given an opportunity to create an organization and then pursue it [2].

2.3. The influencing factors of college student's entrepreneurship

At present, many scholars have studied the influencing factors of college students' entrepreneurial intention. Through the investigation and study as samples, the factors such as personal characteristics, subjective planning, entrepreneurial culture and entrepreneurship education and so on have a greater effect on college students' entrepreneurial intention [4, 5, 7-10, 13-15]. However, most of these studies are conducted from the perspective of qualitative analysis or psychology, and quantitative studies are obviously inadequate. Thus, based on the above research, this paper establishes a system of criteria of the influencing factors of college students' entrepreneurial intention, and determines the weights of the dimensions/criteria by fuzzy analytic hierarchy process (FAHP) to obtain the fundamental factors that affect the entrepreneurial intentions of college students.

3. Research Design

3.1. The framework of rearearch

The structure of this paper is shown in the follow Fig. 1. The framework of paper is based on the literature review and determines the influencing factors of entrepreneurial intention for college student.

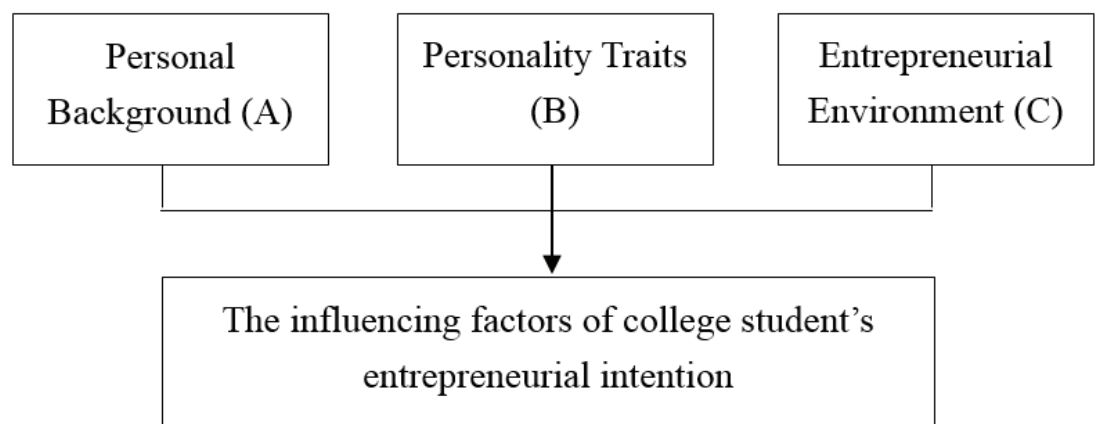


Figure 1: The framewokr of this paper.

3.2. Survey object setting

According to the literature review of college students' entrepreneurship domestic and foreign, find out the factors affecting college students' entrepreneurship. A total of four dimensions and sixteen criteria were summarized using the literature. The relevant dimensions and criteria are listed in TABLE I as below.

This paper uses Microsoft Office Excel 2016 for data analysis and collates the evaluative criteria that affect college student's entrepreneurship into a form. For thirty students of the Fujian University of Technology on one-to-one interviews by questionnaires, and respondents must have relevant backgrounds such as college students and entrepreneurs, for example college students in the EC industry or college students in the WeChat business industry.

4. The Analysis and Empirical Results

TABLE 1: The related dimensions and criteria.

Dimensions	Criteria
Personal Background (A)	Education (A1)
	Parent occupations (A2)
	Growing-up area (A3)
	Academic major (A4)
	Social relationship (A5)
Personality Traits (B)	Need for self-actualization (B1)
	Risk taking (B2)
	Recognition ability (B3)
	Executive ability (B4)
	Innovative ability (B5)
	Coordination ability (B6)
Entrepreneurial Environment (C)	Government policy (C1)
	Financial support (C2)
	Entrepreneurship education and training (C3)
	Business environment (C4)
	Entrepreneurial legal regulations (C5)

4.1. Fuzzy analytic hierarchy process (FAHP)

Owing to linguistic scale of analytic hierarchy process (AHP) does not contain fuzzy uncertainty which decision makers make decision. Larrhoven & Pedrycz evolved conventional AHP, they developed fuzzy analytic hierarchy process (FAHP) [6]. And the pairwise comparison matrix was brought into triangular fuzzy number of the fuzzy set theory. The purpose is to solve vague problem, which occur during the analysis of criteria and judgment process. In addition, FAHP improved drawback which getting weight did not use in fuzzy matrix and concept of consistency transformed fuzzy matrix.

In FAHP, the interval value has replaced exact value, so that expert will be humanity to evaluate problem, and given comparison value of assessment factor. Thus, the FAHP

can reflect to meet problem in decision analysis of actual environment. The procedure of the FAHP is described as follows:

STEP 1: Hierarchical structure construction. Put the goal of the described problem on the top layer of the hierarchical structure, and the criteria on the second layer. The alternatives are in the bottom layer.

STEP 2: Constructing the fuzzy judgement index A. The fuzzy judgment matrix A is pairwise comparison matrix among each criteria and alternative. Generally speaking, we usually used scale which based on Saaty’s scale to generate, shown in TABLE II, to the pairwise comparisons by asking which one of two criteria is more important:

$$\tilde{A} = \begin{bmatrix} \tilde{1} & \tilde{a}_{12} & \dots & \tilde{a}_{2n} \\ \tilde{a}_{21} & \tilde{1} & \dots & \tilde{a}_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \tilde{a}_{n1} & \tilde{a}_{n2} & \dots & \tilde{1} \end{bmatrix} = \begin{bmatrix} \tilde{1} & \tilde{a}_{12} & \dots & \tilde{a}_{2n} \\ 1/\tilde{a}_{21} & \tilde{1} & \dots & \tilde{a}_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ 1/\tilde{a}_{n1} & 1/\tilde{a}_{n2} & \dots & \tilde{1} \end{bmatrix}$$

TABLE 2: Correspond Saaty scale value with fuzzy number.

Fuzzy number	Linguistic scale	Scales of fuzzy number
$\tilde{1}$	Equally important	(1, 1, 1)
$\tilde{2}$	Intermediate	(1, 2, 3)
$\tilde{3}$	Weakly important	(2, 3, 4)
$\tilde{4}$	Intermediate	(3, 4, 5)
$\tilde{5}$	Essentially important	(4, 5, 6)
$\tilde{6}$	Intermediate	(5, 6, 7)
$\tilde{7}$	Very strong important	(6, 7, 8)
$\tilde{8}$	Intermediate	(7, 8, 9)
$\tilde{9}$	Absolutely important	(8, 9, 9)

STEP 3: Calculating fuzzy weights of each criterion. The fuzzy weights of each criterion are calculated by Buckley [1] as follow:

$$\tilde{r}_i = [\tilde{a}_{i1} \otimes \tilde{a}_{i2} \otimes \dots \otimes \tilde{a}_{in}]^{\frac{1}{n}}, \quad \forall i = 1, 2, \dots, n.$$

$$\tilde{w}_i = \frac{\tilde{r}_i}{\tilde{r}_1 \oplus \dots \oplus \tilde{r}_n} \tag{1}$$

where \tilde{a}_{in} is a fuzzy comparison value of criterion i to criterion n , \tilde{r}_i is geometric mean of fuzzy comparison value of criterion i to each criterion, \tilde{w}_i is the fuzzy weight of the i th criterion.

STEP 4: Establishing hierarchical layer sequencing. Calculate the final fuzzy weight value of each alternative by hierarchical layer sequencing

$$\tilde{U}_i = \sum_{j=1}^n \tilde{w}_j \cdot \tilde{r}_{ij} \quad (2)$$

where \tilde{r}_{ij} is the fuzzy weight of the i th alternative. \tilde{U}_i can be indicated by a triangular fuzzy number.

STEP 5: Ranking of the alternatives. The final fuzzy weight values of alternatives are represented in terms of fuzzy numbers. It is necessary to define a method which a crisp value from the fuzzy number to choose the optimum alternative. Therefore, a defuzzification process need to be adopted, and use COA to defuzzyify. The fuzzy numbers can be ranked according to the value of the fuzzy value of defuzzification to determine the optimum alternative.

4.2. The results of analysis

This paper uses FAHP to confirm the structure of the decision problem, and analyzes the relative weights of the three dimensions and sixteen criteria, as shown in TABLE III. In the 30 respondents, the questionnaires of 8 respondents are invalid, thus they are deleted. A total of valid sample size is twenty-two.

From TABLE III, it can observe that the view for college students' entrepreneurial intention, the criterion is that social relationship is the most important. The need for self-actualization, government policy and risk taking have a greater influencing, education, coordination ability and entrepreneurship education and training have little influencing. In the 16 criteria, the top one of ranking is social relationship, which fully reflecting China's native characteristics. Thus, the obtained weights and their ranking are corresponding with the actual situation.

In addition, from the above results, the following suggestions can be made:

Firstly, for individual students, we should establish a good interpersonal relationship and cultivate personal abilities and skills in order to expand into social relationships. Secondly, college students should also stimulate the need for self-actualization, cultivate the ability of individual opportunities and recognition ability so as to enhance their entrepreneurial intentions. Furthermore, for the government, it is necessary to

TABLE 3: Weighted dimensions and criteria of factors influencing for entrepreneurial intention.

Dimensions/criterion	Weight of each dimensions	Weight within dimension (ranking)	Weight over all dimensions (ranking)
Personal background (A)	0.3321		
Education(A1)		0.1463 (5)	0.0486 (15)
Parent occupations(A2)		0.2016 (2)	0.0670 (6)
Growing-up area(A3)		0.1796 (3)	0.0596 (9)
Academic major(A4)		0.1576 (4)	0.0523 (12)
Social relationship(A5)		0.3149 (1)	0.1046 (1)
Personality traits(B)	0.3792		
Need for self-actualization (B1)		0.2195 (1)	0.0832 (3)
Risk taking (B2)		0.1913 (2)	0.0725 (5)
Recognition ability (B3)		0.1852 (3)	0.0702 (6)
Executive ability (B4)		0.1485 (4)	0.0563 (10)
Innovative ability (B5)		0.1357 (5)	0.0515 (13)
Coordination ability (B6)		0.1198 (6)	0.0454 (14)
Entrepreneurial environment (C)	0.2887		
Government policy(C1)		0.2583 (1)	0.0746 (4)
Financial support (C2)		0.2118 (2)	0.0611 (7)
Entrepreneurship education and training (C3)		0.1359 (5)	0.0392 (15)
Business environment (C4)		0.1854 (4)	0.0535 (11)
Entrepreneurial legal regulations (C5)		0.2086 (3)	0.0602 (8)

further improve the mechanisms that are conducive to the entrepreneurship of college students. It can further improve the college student entrepreneurial intentions by formulating various preferential policies that will benefit college students, provide appropriate government programs, and provide financial support et al., and promote self-employed.

Although, entrepreneurship education and training is ranked last, it is not important but it still have implications. Because of the contents of entrepreneurship education and training do not match the needs of college students. The university should combine scientific research with college students and regional local realities, start entrepreneurial issues that students really need, conduct targeted entrepreneurial seminars and conduct appropriate and effective entrepreneurial training to promote and stimulate the formation of college students' intention, and prepare for entrepreneurial activities.

5. Conclusions

This paper establishes an evaluation system for college students' entrepreneurial intention from the aspects of personal background, personality traits and entrepreneurial environment through literature reviews. The relative weight is decided by FAHP method, and the results are obtained provides a valuable reference for self-development of college students, policy formulation for the government, and improvement of entrepreneurship education for college and university. Finally, this paper emphasizes method application, and the alternative method we adopted may not all-inclusively meet each standard. Therefore, we believe the Multi-Objective Programming Method can be applied in the near future to withdraw a fairer and more accurate principle.

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