

Harnessing the IES Model to Probe into the Entrepreneurial Intentions of Chinese College Students

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Abstract. In probing into the determinants of the entrepreneurial intentions among Chinese college students, an IES (Individual Attributes, Entrepreneurial Intentions and In-school Education) model has been devised to uncover the interplay and logical relationships between the four important factors. Methods such as structural equation model, mediating effect test, and one-way ANOVA were used to analyze the 2,114 questionnaires collected from different colleges and universities. The study has found that entrepreneurial intention is the core for understanding corporate behaviors, that different determinants have different effects on entrepreneurial behaviors, and that individual attributes also have impact on entrepreneurial intentions to varying degrees. The author suggests that colleges and universities should encourage college students to start their own businesses, and take proactive steps to help college students develop entrepreneurial awareness during their school days, thereby driving innovation and entrepreneurship among college students.

1 Introduction

Given its important role in driving national and regional economic growth, entrepreneurship is drawing increasing attention from students at large. In the wake of increasing popularization of higher education, businesses and companies are now tightening their recruitment requirements in hopes of taking in highly educated and high-caliber talent, thus putting more and more pressure on today's college students. On the other hand, the lack of social experience in many college students runs counter to the requisites for successful entrepreneurship. As a result, an overwhelming majority of the entrepreneurial efforts by college students have ended in failure. In an effort to assist in the successful entrepreneurship by college students, we have decided to probe deep into the entrepreneurial intentions of college students. American scholar Bird [1] was the first to put forward the concept of "entrepreneurial intention", arguing that entrepreneurial intention arises from the combination of personal and environmental factors. Brazeal [2] further proposed the concept of "potential entrepreneur", holding that entrepreneurial intention is a kind of subjective attitude of potential entrepreneurs to whether or not to engage in entrepreneurial activities.

Building on a relevant theoretical model and the data from a survey of 2,114 undergraduate students in different colleges and universities in Fujian Province, this study aims to probe into the entrepreneurial intentions of college students from four dimensions — entrepreneurial motivations, entrepreneurial intentions, in-school education and individual attributes — in a bid to unfold how each dimension influences the entrepreneurial

behaviors of college students.

2 Theoretical model and research assumptions

2.1 Theoretical Model

The Theory of Planned Behavior (TPB) proposed by Ajzen [3] emphasizes that all factors that affect behavior indirectly through behavioral intentions, which are determined by three correlated factors: 1) an individual's "attitude" towards a specific action; 2) the "subjective norm" from the outside, or "subjective awareness"[4], which will have an impact on a specific behavior of an individual; and 3) "perceived behavioral control". This study found that perceived behavioral control is a disorder reflecting an individual's past experiences and expectations, and it has its impact by motivating behavioral intentions or directly predicting behaviors. Entrepreneurial intention is the "core" for understanding entrepreneurial behaviors [5], because entrepreneurship is a conscious behavior. TPB has provided a solid theoretical framework for explaining entrepreneurial behaviors.

According to existing studies [6], factors affecting college students' entrepreneurial intentions mainly include individual attributes (i.e., personal innovation ability, gender, major, education, parent's occupation, university attended, etc.), entrepreneurial motivation, success factors (i.e., entrepreneurial opportunities, financial support, family support, government policies, etc.), entrepreneurial environment (i.e., economic

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situations, market environment, support from friends, support from school, support from local government, social atmosphere, etc.), individual background, etc. Taken together, the entrepreneurial intentions of college students are formed under the combined action of many factors.

Thus far, there have been few studies on the entrepreneurial intentions of college students. Although some scholars have attempted to polish up or supplement the TPB model, none has tried to dig into the logical relationships therein. In numerous past studies, entrepreneurial awareness appeared as the only determinant of entrepreneurial intentions. However, many scholars maintained that entrepreneurial intentions are carried out under the influence of multiple factors, which must be studied according to the specific attributes of research subjects. Taking college students as the research subject, this study attempts to examine the formation and determinants of the perceived responses to entrepreneurial intentions in college students. Against this backdrop, an IES (individual attributes, entrepreneurial intentions and entrepreneurial motivations) model has been created to probe into the determinants of college students' entrepreneurial intentions, as shown in Figure 1.

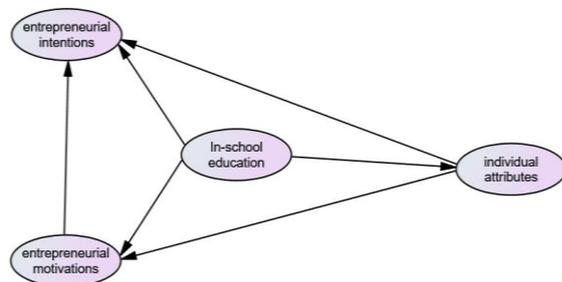


Fig. 1. Research model.

2.2 Basic assumptions

2.2.1 In-school education has a positive impact on entrepreneurial motivations and individual attributes.

According to a theory put forward by Wang Gang [7], in-school education is the most important part of all sorts of education received in one's life — one will receive well-planned guidance and systematically learn cultural knowledge, social norms, moral codes and values in the school. In a sense, in-school education, as an important cornerstone of one's socialization, determines the level and nature of an individual's socialization. Some studies have confirmed that the different approaches to education in different schools have a direct impact on individuals' behaviors and motivations. With the support from the above-mentioned studies, the following assumption is proposed: in-school education has a positive impact on entrepreneurial motivations and individual attributes.

2.2.2 Individual attributes have a positive impact on entrepreneurial motivations

Individual attributes refer to constraints and barriers facing the individual, and are mainly manifested in

individual's own conditions and his/her cognitive bias, which would have an impact on individual's self-efficacy — the belief in his/her capacity to act in the ways necessary to reach specific goals — and consequently individual's behaviors and motivations. With the support from previous studies, the following assumption is proposed: individual attributes have a positive impact on entrepreneurial motivations.

2.2.3 Entrepreneurial motivations, in-school education and individual attributes have a positive impact on entrepreneurial intentions

Entrepreneurial motivation refers to the force or drive within an individual that encourages or directs him/her to pursue entrepreneurial success in the face of various risks. It is also the core factor for entrepreneurial individuals to understand social norms and cognition [8]. According to what has been explained in the preceding paragraphs, the following assumption is proposed: entrepreneurial motivations, in-school education and individual attributes have a positive impact on entrepreneurial intentions.

3 Research design

Through questionnaire surveys and unstructured interviews, this study has combined online electronic questionnaires with offline paper questionnaires to collect feedback from students in 180 Chinese universities (including higher vocational colleges). A total of 2,114 valid questionnaires were collected after excluding incomplete questionnaires or those containing more than one incorrect answers to trap questions.

The sample for this study has the following characteristics: 1) gender: males accounted for 47.5% and females accounted for 52.5%; 2) place of growth: 45.8% had grown up in urban areas and 54.2% in rural areas; 3) financial status of the family: 12.6% from poor families, 55.6% from average families, 22.0% from well-off families, and 9.8% from wealthy families; 4) only child: 41.5% were only child in the family and 58.5% were not.

In this study, entrepreneurial intention was taken as the most important primary variable, and entrepreneurial motivation, in-school education, and individual attributes were taken as the secondary variables that affect entrepreneurial intention and interact with each other. A model has been created to test the assumptions hereunder.

Among them, entrepreneurial motivations mainly includes five variables: financial independence, sense of accomplishment, self-challenge, self-recognition, and spare time; individual attributes mainly include five variables: risk resistance, fighting spirit, professional quality, innovation consciousness, and information processing ability; and in-school education mainly includes five variables: entrepreneurship courses, entrepreneurship competitions, company visits, entrepreneurship bases, and entrepreneurship atmosphere.

4 Research findings and analysis

4.1 Model reliability and validity test

To ensure good reliability and validity of the structural equation model, the sample data were tested for reliability and validity using the widely accepted Cronbach's Alpha (a value above 0.67 is deemed reasonable) [9]. Analysis showed that the Cronbach's Alpha of the sample data is 0.673, suggesting that the stability and reliability of the tested sample meet the basic requirements of measurement. Meanwhile, in regard to the KMO (Kaiser-Meyer-Olkin) Test and Bartlett's Test of Sphericity [10] for all variables, KMO Test returned a value of 0.912, very close to 1, suggesting strong correlations between variables and therefore high reliability and validity of the variables in this study. Bartlett's Test of Sphericity derived a probability of 0.000, which also points to the high reliability for factor analysis.

4.2 Research based on the structural equation model

4.2.1 Overall fitness of the equation model

The following table details the main fit indices obtained from structural equation model testing. After comparing with the standard or critical values of fit, it's found that the

results of all fit indices fell within the range of standard or critical values. Therefore, it can be concluded that the setup of this structural equation model is fit for the actual data.

Table 1. Fit indices of the structural equation model

Fit indices	Fitting criteria or thresholds	Goodness of fit
GFI	>0.9	0.929
RMSEA	<0.08	0.063
NFI	>0.9	0.922
IFI	>0.9	0.929
CFI	>0.9	0.929

4.2.2 Results of assumption testing

The structural relationships between latent variables and their standardized path coefficient estimates, T values, and assumption testing results are shown in Table 2. It can be seen that all assumptions have passed the T test, except that individual attributes have a negative impact on entrepreneurial intentions. The corresponding p-values were all less than 0.01, meaning that when the confidence level is 95%, there is a significant difference between the path coefficient and 0. The actual model and path coefficients obtained are shown in Figure 2.

Table 2. Results of assumption testing

Relationship	Standardized path coefficient	T value	Conclusion
In-school education (IE) → entrepreneurial motivations (EM)	0.309	9.218	Yes
In-school education (IE) → individual attributes (IA)	0.737	29.996	Yes
In-school education (IE) → entrepreneurial intentions (EI)	0.023	3.151	Yes
Individual attributes (IA) → entrepreneurial motivations (EM)	0.450	13.338	Yes
Individual attributes (IA) → entrepreneurial intentions (EI)	-0.043	-4.064	No
Entrepreneurial motivations (EM) → entrepreneurial intentions (EI)	0.110	4.674	Yes

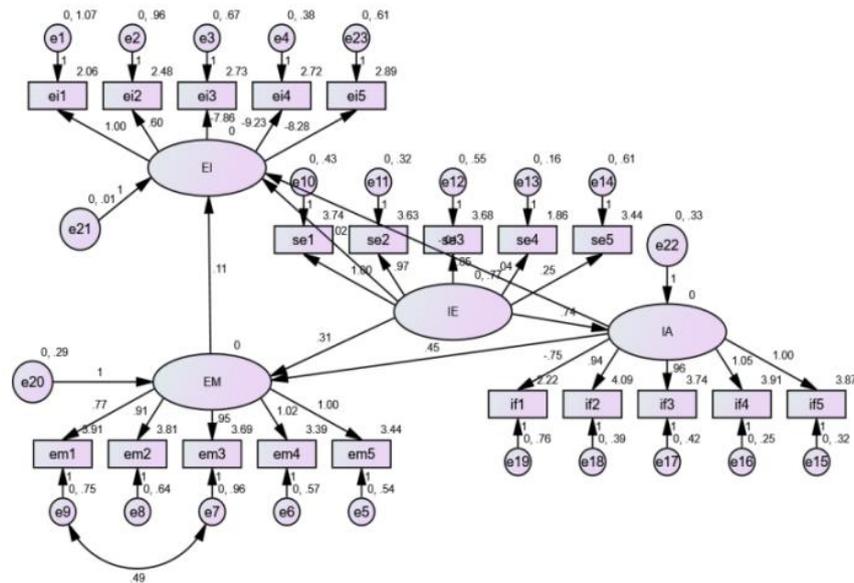


Fig. 2. The actual model and standardized path coefficient.

4.2.3 Mediating effect analysis

This study used the Bootstrap Confidence Interval method [11] to test the mediating effect and to estimate the standard error and unstandardized coefficient of the indirect effects, thereby calculating the corresponding significant levels (Z value). The results of mediating effect testing are shown in the table below. No value of indirect effects contained 0 between the upper and lower intervals of Bias-corrected and Percentile, with $Z > 1.96$ or $Z = 1.96$. The corresponding P values of all paths are 0.01, indicating that the indirect effects were significant. The results show that entrepreneurial motivations play a significant mediating role between individual attributes and entrepreneurial intentions.

5 Policy recommendations and conclusions

5.1 Policy recommendations

As the fresh blood shoring up mass entrepreneurship and mass innovation, college students play a pivotal role in colleges and universities. Over the past years, a myriad of Chinese college graduates have plunged themselves into diverse entrepreneurial activities. However, they have run into varying problems such as financing difficulties, lack of experience, sub-standard services, etc. In order to strengthen the innovation and entrepreneurship awareness of college students and sharpen their innovation and entrepreneurship abilities, we are offering the following suggestions:

5.1.1 Schools should support students in extensively gaining entrepreneurial experience

Thus far, many colleges and universities have launched

entrepreneurship counseling courses to teach students entrepreneurial management, entrepreneurial psychology, etc., in a drive to help college students develop the basic qualities essential for entrepreneurship. In order to stimulate college students' enthusiasm for entrepreneurship, some schools have also kicked off entrepreneurship competitions such as Innovation and Entrepreneurship Competition for College Students, Internet+ Challenge Cup, etc. Entrepreneurial knowledge acquired by college students in this way tends to be more targeted.

5.1.2 College students should rediscover themselves ideologically and spiritually and take the initiative to find entrepreneurial motivations

College students should build up self-confidence, strive for self-improvement and develop a sense of self-independence. Not only should college students have confidence in their own abilities, but they also need to establish a positive attitude towards life and develop an enterprising spirit through self-improvement, holding the belief that they could become successful entrepreneurs. Self-independence means an ability to think and act independently.

5.1.3 College students should take an active part in various practical activities to improve their comprehensive qualities

Practical activities allow college students to gain entrepreneurial experience and hone their entrepreneurial skills during their stay in school. Therefore, colleges and universities should engage college students in various social practices to help them broaden horizons and cultivate a strong desire for entrepreneurship. By taking part in community-organized activities, entrepreneurial internship programs, job hunting, and social surveys, college students will gain a better understanding of the

society and market beyond the campus, toughen their minds, hone their overall qualities, and brace better for setbacks and difficulties.

5.2 Conclusions

5.2.1 In-school education has a positive impact on entrepreneurial intentions

From the test results in Table 2, it can be seen that in-school education affects entrepreneurial motivations and individual attributes (standardized path coefficients being 0.309 and 0.737), thereby having an indirect impact on entrepreneurial intentions through these two dimensions. In-school education has a direct impact on entrepreneurial intentions (standardized path coefficient being 0.032), suggesting that in-school education well contributes to the entrepreneurial activities carried out by college students. Therefore, schools can arouse the entrepreneurial desire of college students by organizing innovation and entrepreneurship competitions and launching entrepreneurial guidance courses.

5.2.2 Individual motivations have a positive impact on entrepreneurial intentions

The test results in Table 2 reveal that entrepreneurial motivations have a positive impact on entrepreneurial intentions (standardized path coefficient being 0.110). College students who are financially independent or have more spare time are more likely to carry out entrepreneurial activities.

5.2.3 Individual attributes have a negative impact on entrepreneurial intentions

The test results in Table 2 show that individual attributes have a positive impact on entrepreneurial motivations (standardized path coefficient being 0.450) but a negative impact on entrepreneurial intentions (standardized path coefficient being -0.043). Individual attributes mainly includes an individual's own conditions and his/her cognitive bias, which would have an impact on individual's self-efficacy — the belief in his/her capacity to act in the ways necessary to reach specific goals. The former makes college students hold a pessimistic attitude towards entrepreneurship, believing that it will not work out, while the latter discourages college students from starting a business because they think they'll eventually be recruited by other companies.

5.2.4 There is a correlation between the two residuals of financial independence and self-challenge

The test results in Table 2 also point to a plausible correlation between the two residuals of financial independence and self-challenge. Let me put it this way: Entrepreneurship is beyond doubt a good opportunity for college students to challenge themselves, as it entails not

only a wealth of knowledge and expertise but also exceptional comprehensive capabilities, good mental strength and rich social resources. For them, entrepreneurial success also means financial independence, a state of being symbolic of the true self-independence of a college student. To accomplish "financial independence", college students can opt for entrepreneurship, which is obviously a good opportunity to challenge themselves. Only by seizing the opportunities agilely can college students get what they want. All in all, there is a mutually reinforcing relationship between "entrepreneurship is an opportunity to challenge oneself" and "entrepreneurship can help achieve personal financial independence".

This study has put forward an IES (Individual Attributes — Entrepreneurial Intentions and Entrepreneurial Motivations — In-school Education) model to uniformly explain the determinants of college students' entrepreneurial intentions. It's found that individual attributes, in-school education and entrepreneurial motivations have varying degrees of impact on college students' entrepreneurial intentions, with entrepreneurial motivations and in-school education posing the most significant impact on and individual attributes being negatively correlated with entrepreneurial intentions. It can be concluded that schools should take proactive steps to help college students develop entrepreneurial awareness during their school days, whilst enabling policies should also be rolled out to support college students in their innovation and entrepreneurship.

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